THE IRON TRADE REVIEW

VOLUME XXVIII. CLEVELAND, O. FEBRUARY 21, 1895. CHICAGO, ILL. NUMBER 8.

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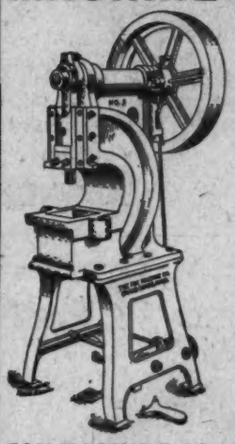

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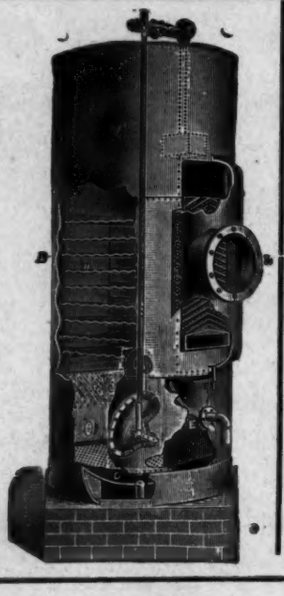

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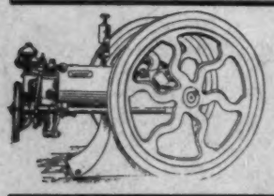

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THE IRON TRADE REVIEW

VOLUME XXVIII. CLEVELAND, O. FEBRUARY 21, 1895. CHICAGO, ILL. NUMBER 8.

THE WEEK IN IRON CIRCLES.

THE MARKET AT LARGE.

With no strongly marked tendency as to prices, the iron trade is nearing the season that is expected to tell more plainly than has been indicated thus far, what sort of a year 1895 is to be. The signs of promise have been accompanied by much that is not so hopeful. Rail buying has not been of the volume the steel companies had looked for, and the 150,000 tons placed in January would be more satisfying if it were not that on some of it the buyers are not bound to specify in '95. Thus far specifications on rail contracts have come slowly to the mills. On other classes of mill products the current output is of moderate proportions, and there is encouragement in the fact that as the season advances work will be more abundant. The sales of the past few weeks for spring delivery make this sure. A good many country electric railway enterprises are afoot, and 1895 promises to maintain the ratio of increase in this demand, shown in a total of 155,000 tons of steel rails for city and intertown electric lines in 1894, against 133,423 tons in 1893, 111,580 tons in 1892 and 81,302 tons in 1891. Recent developments have emphasized the uncertainty about the price of coke that hangs over the blast furnaces supplied from Connellsville ovens. The chief producer has given notice of the termination of the 90-cent and $1 contracts that were made at the first of the year with the proviso that they stopped on 60 days notice. Some of these arrangements cease March 1 and others later. The very heavy shipments of coke since the first of the year indicate that furnacemen are providing against strike contingencies as far as they have facilities for stocking. In the Bessemer pig market Pittsburg sales have been made at $10@$10.15—one transaction of 3,000 tons being reported at the former price. Valley furnaces have made some heavy sales at from $9.35 to $9.50. While billet mills in the main are sold up for two to three months, deliveries are not in all cases up to the contract pace and small-lot orders are being worked in. Pittsburg sales at $15.00 and in the valleys at $14.65 and $14.75 have been made in the week. Reports from selling centers for Southern pig iron agree that sales and shipments have been light of late, though somewhat better than in January. Foundries melted less iron in the extreme cold weather and since that period have been less urgent about shipments. Southern iron has fared better in the Chicago district in the past three months than in the fall, prices of local and Southern having approximated meantime. The announcement by the Illinois Steel Co. that its plate mill will be in operation March 15 means so much added competition in Central Western territory for ship plates and tank steel, and there are signs that, in consequence, the district tributary to Chicago may see a more aggressive campaign in other lines by mills whose plate trade will be disturbed by the new arrangement. For a good many months the Pittsburg mills have had this field to themselves, two Cleveland plate mills being idle, one of them not to resume. Billets and rods have had large sales in the Chicago market of late, and the settlement of the labor troubles at the Joliet mill removes one support of the firmer attitude of some mills on both products. A portion of the 1,500,000 elevated railroad contract taken at Chicago has been sublet to the Elmira, (N. Y.) Bridge Co., and the material will come from Pittsburg mills. Deliveries are scattered over 18 months. Philadelphia advices indicate a larger sale of finished material, but chiefly for delivery in the spring and summer months, so that the immediate position at mills and furnaces is no better than it has been for several months past. There are no signs that prices in the East will show more than fractional changes for some time to come. Soft steel has held up better in that market than anything else.

THE CLEVELAND OUTLOOK.

The iron ore market has been without incident the past week, save for the ripple of humor occasioned by a Milwaukee dispatch, with flaming headlines, telling of the red ruin that had come on every mining company and mining town outside the Mesabi range. "Billions of tons" of ores, "enough to supply the world 1,000 years," and other little touches should have been enough to brand the whole thing as a burlesque on iron ore boomers, but even a leading Pittsburg paper gave the dispatch first place and commented editorially on its Pittsburg significance. The decision of the commissioners of lake counties in Ohio to tax iron ore on the dock on the basis of a valuation of 50 cents a ton means an additional burden of 1¼c a ton to the ore companies, since it will eventually come out of the seller. No action has been taken by the ore men on the matter.

Pig Iron. A week of brisk buying of Bessemer pig iron has followed the inactivity of more than a month. Two steel companies have been in the market and their purchases, with other lots, aggregate a total for Pittsburg and the valleys of close to 50,000 tons. Prices and deliveries vary. On the former the range is from $9.35 valley furnace, at which the first iron was taken, to $9.50. On some of the metal, deliveries end in March, in other cases they are carried along into June. The result of this movement has been to stiffen the market for Bessemer and on the latest sale made to the leading Pittsburg producer, $9.50 was netted the furnace, the brokerage being assumed by the buyer. In the past two days $9.45 has been refused by furnaces in the valley, and the number of inquiries still made for iron indicate that an additional advance may follow. It is known that the chief buyer of the week has been making a considerable inroad on its stocks of Bessemer of late. Foundry iron is on no better basis. The cutting of prices by a particular selling interest continues.

Finished Material. Valley mills are running quite irregularly. In bar iron a 500-ton contract at Toledo is the only important incident of the week. Prices continue on a 90c basis at mill for common iron. Plates and structural material are in fair demand, with no large business going.

THE CHICAGO OUTLOOK.

[SPECIALLY REPORTED FOR THE IRON TRADE REVIEW.

The week under review has been better in some respects than the week previous, and some good sales of material are reported as having been made. An encouraging feature is the fact that in nearly all branches of the iron and steel trade there is a continued inquiry, with good prospects that quite a large amount of it will develop into orders in the near future. Pig iron has been rather quiet, with very little change from the week before; bars appear to be in rather better demand, but no very large single orders have been taken; quite a large lot of billets was sold, the demand for rods is keeping up, and other classes of material are doing quite as well as could be expected.

PIG IRON.—Northern iron sold quite as well last week as in the week previous, but only one sale of any size—one of 2,000 tons—was made. Orders for smaller lots were quite frequent, and the total tonnage closed was as large as had been expected. There are several new inquiries for round lots in the market that will probably be orders before long. Southern iron was rather quieter than in the week before, no orders larger than 200 or 300 tons being secured. There are still several buyers in the market who have not filled their requirements, and it is likely that considerable buying will be done in the next two or three weeks. Prices are unchanged, and while the charges of cutting on the part of certain Southern producers are still heard, there does not seem to be anything to substantiate them. Our quotations are continued as follows:

Lake Sup. Charcoal	$13 00@13 50	Southern No. 2 Soft	$10 00@10 25
Local Coke Fdy. No. 1	10 25@10 50	South'n Silveries No. 1.	11 50@11 75
Local Coke Fdy. No. 2	9 75@10 00	South'n Silveries No. 2.	11 25@11 50
Local Coke Fdy. No. 3	9 40@ 9 65	Jackson Co. Silveries	15 50@16 00
Local Scotch Fdy. No. 1.	10 25@10 50	Ohio Silveries No. 1	14 00@14 50
Local Scotch Fdy. No. 2.	9 75@10 00	Ohio Silveries No. 2	13 00@13 50
Local Scotch Fdy. No. 3.	9 50@ 9 75	Ohio Strong Softeners	12 50@13 00
South'n Coke No. 1	11 00@11 25	Alabama Car Wheel	17 50@18 00
South'n Coke No. 2	10 00@10 50	Malleable Bessemer	11 00@11 50
South'n Coke No. 3	9 75@10 25	Coke Bessemer	11 00@11 50
Southern No. 1 Soft	10 25@10 50		

BARS.—The week has been rather quiet, but sales of small lots have reached a good aggregate, and there appears to be an increased inquiry from the agricultural and wagon trade. No large car orders were taken in the week, but one or two of the smaller ones were placed. Prices are still made at 1c for common iron, although there is very little doubt that this is being shaded considerably by some companies. Guaranteed iron is quoted at 1.15c, and steel bars from strictly billet stock at 1.20c.

RAILS AND TRACK SUPPLIES.—Only a small business was done last week, and no large orders were taken. Quotations are unchanged, as follows: Rails, $23 to $25; splice bars, 1.25c to 1.30c; track bolts, 1.95c to 2c; spikes, 1.65c. to 1.70c.

BILLETS AND RODS.—Sales to the amount of 16,000 tons of billets at the quoted prices were made last week, and this appears to clear the market of all intending buyers. Prices are continued at $16.50 to $17. The demand for rods is still large, and several good sales were made last week at $23.50 All of the three Western mills are reported as being filled with orders until the first of June, and it is not likely that any large business will be reported from this market before that time. The labor troubles at the Joliet mill of the Illinois Steel Co. have at last been settled, and as soon as it is necessary the mill will be started. It is not known just when this will be.

STRUCTURAL MATERIAL.—As stated last week, the contract for the 28,000 tons of material for the Northwestern elevated road went to a New York concern, the Union Bridge Co. taking it. The material will be furnished by a Pittsburg mill. The price at which this business went could not be obtained, but it is probably very low, taking the deliveries, eighteen months, into consideration. There is quite a good call for bridge material from the railroads, and some good contracts will be let in the near future. General business has been rather quiet, but still keeps up as well as could be expected. Prices are unchanged, as follows: Beams and channels, 1.45c to 1.50c; angles, 1.30c to 1.35c; plates, 1.40c to 1.45c; tees, 1.55c to 1.60c. Small lots from stock are quoted at from ¼c to ½c higher.

PLATES.—Business continues quiet, and sales were only for small lots and immediate delivery. The principal item of interest is the announcement made by the Illinois Steel Co. that its plate mill at South Chicago is completed and will be started up on ship plates and tank steel on March 15, next. Inside of two or three weeks thereafter it is expected that the mill will be rolling other classes of plates. No orders have as yet been taken by this company, but in the future it will be an active bidder for business, and undoubtedly will secure its share of what is going. Quotations are as last reported: Tank steel, 1.35c to 1.40c; flange steel, 1.50c to 1.75c; firebox steel, 2c to 5c; boiler tubes, 75 to 77½ per cent discount.

MERCHANT STEEL.—Some classes of buyers are making quite large purchases, but as a rule trade is quiet. Quotations are unchanged from our last report. Open-hearth spring, tire and machinery steel, 1.65c to 1.70c; smooth finished tire and machinery, 1.50c. to 1.60c.; Bessemer bars, 1.35c. to 1.40c.; tool steel, 5.50c to 7.50c.; specials, 11c. and upwards.

SHEETS.—There is a disposition on the part of jobbers to ascertain the view of the mills regarding prices for future delivery, but as yet no orders have developed as a consequence of this curiosity. Whether any large sales will be made in the near future to this class of trade is an open question. General business keeps up well, and some good sales were made last week. Prices are as follows: No. 27 common iron, 2.30c to 2.35c; steel sheets 2.40 to 2.45c; galvanized sheets, 75 and 10 per cent discount.

OLD RAILS AND WHEELS.—Some large sales of old material were made in this market last week, but as they were not for Chicago delivery it was impossible to get a price that would be a basis for a quotation. Old iron rails are quiet, and dealers are asking $10.50 and up. Buyers, however, are not willing to pay more than from $10 to $10.25. Old steel rails are in short supply, owing to the snow in the yards, which prevents the roads from getting the material in marketable shape. In spite of this the price has not advanced, and steel rails are being quoted at from $6.50 to $7 for short and $8.50 to $9 for long lengths. Old wheels are in light demand, and small sales were made last week at less than $8.50.

SCRAP.—Business has been quiet, and prices are nominally as follows: No. 1 forge, $8 to $8.50; No. 1 mill, $6.50; No. 1 machinery, $6.75; axles, $12.50; cast borings, $3.50; wrought turnings, $5.25; axle turnings, $6.25; mixed steel, $5; heavy cast, $7 to $7.25; stove plates, $5 to $5.25; heavy melting steel, $6 to $6.50.

IN OTHER MARKETS.

[SPECIALLY REPORTED FOR THE IRON TRADE REVIEW.]

Cincinnati. The week in pig iron has been dull and featureless. The extreme cold weather in its early portion interfered with active operations in foundries and mills, particularly in the former, where it has been impossible to keep the sand from freezing. The result is a reduced melt. Shipments also of both pig iron and coke have been very light, in consequence of the difficulty of loading and the partially disabled condition of the

railroads. Some manufacturing plants have therefore been inconvenienced by the failure of raw material to arrive. The general temper has been without any spirit or nerve on the part of buyers, who generally prefer to see signs of greater activity in their own business before anticipating their wants. The more hopeful features of the situation are the abatement for the time being of the gold exporting scare; the prospect for a somewhat active season in structural work, making heavy demands already upon the large Bessemer steel plants; the indications that the smaller railroads will be larger consumers of new rails than for several years past, and the reasonable certainty that car building will at least improve to some extent. The outlook for cast iron pipe is also regarded as good after the opening of spring.

Philadelphia. Stove makers, bridge builders, cast iron pipe works and jobbing foundries in the vicinity, and as far west as Harrisburg, are, with but few exceptions, pretty busy filling orders. Bessemer pig is firm, so is Bessemer steel. Pig metal purchases are for small amounts and for fairly early delivery.

Buffalo. The increased activity which characterized the two weeks previous to this, has not attached to the week just closed, so far as the market tributary to this point is concerned. There is discernible, however, more of a disposition to consider future and near-by wants and a prospect that during the next thirty days considerable buying is likely to take place. The supply of all kinds of iron appears to be liberal.

Chicago Consolidated Steel and Iron Co.

The plant put up at Harvey, Ill., just before the financial panic, by the General Engineering Co., which was started by the old firm of A. J. Sweeney & Sons, of Wheeling, W.Va., and which has been in the hands of receivers ever since the failure of the General Engineering Co. in 1892, has just been purchased by a new corporation called the Chicago Consolidated Steel & Iron Co. This company will continue the business of manufacturing the line of machinery made by A. J. Sweeney & Sons and the General Engineering Co., adding two or three new specialties. The new company has ample financial backing, and is capitalized at $500,000, all paid up. It is under the management of Mr. J. M. Sweeney, of the old concerns, whose long experience, in both the practical work and business management of large manufacturing enterprises, and as a mechanical engineer and builder of machinery, will insure good work and satisfaction to the patrons of the new company. The company will start operations at once, and expects to be well employed from the start, as it will make a line of machinery already well known to the trade. With Mr. Sweeney at its head, it will undoubtedly make a success of the business.

THE labor troubles at the Joliet mill of the Illinois Steel Co. have all been settled, the men who were standing out having taken the wages offered them by the company. The mills have been closed down since the first of the year, throwing about 2,000 men out of employment. The officials of the Illinois Steel Co., at Chicago, stated that it was not decided when the mills at Joliet would be started up, as at present there is not enough demand for their products to warrant their running. It is expected, however, that they will be started up sometime within a month.

CONNELLSVILLE coke production and shipments fell off in the week ending Feb. 9, the snow and severe cold interfering seriously. There were 14,069 active ovens with estimated production of 136,670 tons, a decrease of 13,109 tons from the previous week. The shipments of the week were 6,916 cars, a decrease of 1,526 cars from the preceding week. The *Courier* says: "Consumers who have large storage capacity continue to stock up. The Edgar Thomson Steel Works at present have in the neighborhood of 200,000 tons of stock coke on hand."

LAKE SUPERIOR IRON MINES.

The Champion continues to furnish employment to 175 men. Only two stopes are being wrought, operations below surface being otherwise confined to floor and pillar reserves. Only those familiar with the situation can intelligently appreciate the difficulties under which mining is conducted here. Depth is by no means an unimportant consideration. Crushing is a new and formidable item in the cost sheet, and while the entire product is of merchantable quality, being within the Bessemer limit, there are three grades to contend with. Some of the ore sent to surface assays as low as 56 in metallic iron. Care in separation involves additional expense. Superintendent Fitch has practically contracted with the company to furnish a given quantity of ore at a certain figure and is doing all that fairness, enterprise and skill can do to accomplish his task. Upon this and the sale of ore depend the immediate condition of future activities.—[Iron Ore, Ishpeming, Mich.

It was stated some time ago that the Franklin, on the Mesabi, would soon close down. A large stockpile is being accumulated, but there are no signs yet of suspending operations.

The Oliver Mining Co.'s shaft is down 130 feet and considerable water is encountered. Drifting, to determine the extent of the ore body, is in progress.

At the Pioneer mine work is now being pushed in the second diamond drill hole in the seventh level at a depth of 594 feet. The Ely *Times* says: "The drill is now in a distance of 302 feet, 68 feet of which is high grade Bessemer ore, and still has not reached the further limit. The hole dips at an angle of 17 degrees, so that the present depth is about 730 feet from the surface, showing that the ore continues down an indefinite distance. Last week they penetrated the ore in the fifth level 22 feet, crossing the formation. As soon as the weather gets warmer the company will begin to set up its large air compressor and put in two large new pumps."

It is estimated that there are 300,000 tons of ore in the stockpiles of No. 3 and No. 4 shafts of the Chandler mine.

The old machinery at the Dexter mine on the Marquette range is being replaced by new. The mine is now down about 400 feet and is looking well. The force numbers 50 men.

Only a part of the Cincinnati mine has reverted to the fee-owner—that part owned by John M. Williams, of Chicago. His property takes in the original shaft, No. 3, where all the ore so far taken out has been hoisted. That proportion of the property owned by Messrs. Kinney, Gridley, Hill, Bliss et al., which takes in the new No. 10 shaft, is still in possession of the Standard Ore Co., and it is understood that the company has reached an amicable understanding with the fee-owners on a basis of 30 cents per ton royalty and 30,000 tons minimum output. It is also probable that the company will reach some agreement with Mr. Williams, so that both portions of the property will be operated under one management as formerly. —Mesabi Range, Biwabik, Minn.

The paragraph in our last issue condensing a press dispatch relative to the Wisconsin supreme court decision on the case of Warner vs. Moore, Benjamin & Co. and F. A. Bates, was inaccurate in one or two particulars. The case was carried to the higher court by Mr. Bates, and the testimony submitted in the briefs showed that at the time the sale of the Gogebic stocks was made Mr. Bates was not a member of the firm of Moore, Benjamin & Co.; that he was in New York when the sale of stock was made and had no part in it. The supreme court decision reversing the verdict of $19,000 in Mrs. Warner's favor is final, we are informed, and the case was not remanded for re-trial.

MACFARLANE & CO., of Louisville, with a branch office in the Monadnock Block, Chicago, under the management of R. C. Cantelou, have been made sales agents for the well-known brands of pig iron made by the Woodward Iron Co., of Woodward, Ala., in Kentucky, Indiana and Chicago territory, the latter including Southern and Western Michigan and the Northwest.

THE Andrews Bros. Co., represented in Chicago by Mr. John McLauchlin, at 808 New York Life Building., has been appointed general western agent for the sale of the iron and steel roofing and siding manufactured by the Youngstown Iron & Steel Roofing Co., of Youngstown, O., under the patents of John O. Pew.

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FEBRUARY 21, 1895.

THE statistics of Bessemer steel production in the United States in 1894, given on another page, will be read with special interest by producers of Lake Superior iron ores. The total of 3,579,101 gross tons of Bessemer ingots, while considerably short of the 4,168,435 tons of 1892, is an increase of 11 per cent over the total for 1893. When there is considered, too, that the output of open-hearth steel ingots, which reached 737.890 gross tons in 1893, and probably a greater amount last year, is largely from high-grade Lake ores, most of them within or close to the Bessemer limit in phosphorus, it will be seen that the draft upon the best ores of the Lake Superior region is at a prodigious rate today. And a study of the blast furnace returns from month to month shows that while furnaces here and there drop out of the active list, there is no diminution of the output of those tributary to the Lake region.

THE increased application of electricity to the driving of machinery brings the mechanical engineer and the electrical engineer into closer co operation; indeed, the mechanical engineer of the future will need more and more to be an electrician. In iron and steel industries, electrical equipment is becoming a factor, more particularly in connection with iron mines and steel works. Metallurgical processes have not yet invoked the aid of electricity to any extent, and it is not to be expected that the progress in that direction will at all keep pace with the advance on the mechanical side.

IN the Trade Revival Number of *The Iron Trade Review*, President Moxham, of the Johnson Co., made this reference to an unimproved advantage in water freights possessed by Cleveland:

> We think, too, that water freights offer a development not yet recognized, for Cleveland's good. The internal water traffic, has heretofore cared rather for goods in bulk, such as grain, than for finished articles. With large supplies of finished steel—large enough to guarantee a fair return—there is no reason why special preparation should not be made to meet it, and if made, secure an outlet east, by means of the canals, at a low rate of freight.

Reference was had in the above, no doubt, to an enterprise which promises soon to be a fact. The Steel Canal Boat Co. is to be incorporated under the laws of Michigan with a capital of $160,000 to build and operate small barges to run between Cleveland and New York. They are to be built of steel and planned with reference to handling all classes of merchandise and package freight, as well as grain, coal and other bulk freight. It is proposed to build three propellers and 15 consorts, making three fleets, each consisting of a steamer and five consorts. The Globe Iron Works Co. has submitted estimates and Cleveland and other capitalists have subscribed to the stock. The average rate, it is estimated, on the freight these barges would carry will be 12½ cents a hundred, on articles upon which the rail rates range from 15 to 50 cents. The line, it is predicted, will furnish exceedingly cheap transportation for iron and steel from the Cleveland district to New York and New England points.

OUR IRON CAMPAIGN IN CANADA.

THE invasion of the Canadian market, particularly the districts tributary to Toronto and Montreal, by pig iron from this side of the border, has been referred to several times in these columns in the past year. In Ontario, which is the chief consuming market in Canada, Scotch iron has been rapidly displaced. Latterly, Scotch foundry iron delivered at points in Ontario has been, on the average, $4 a ton higher than No. 1 foundry from the United States. Though many of the consumers of Scotch iron, who have become wedded to it through years of use, would prefer to have it could they buy it within $1 or $2 a ton of the price of American iron, the difference actually maintained has limited the competition for the Ontario market to that between American and Canadian furnaces. Foundrymen in Canada, as in the United States, have been learning to use new irons, and have found that the cheaper product from this side the line will carry quite as much scrap as the high-priced Summerlee, to which they have been accustomed. We do not look to see the present difference in favor of American iron long perpetuated, but the cultivation of the Ontario foundry trade by furnaces on this side that can ship into that territory to best advantage, will result in such an acquaintance with the American iron as will permit of the maintenance of a considerably smaller difference between the Scotch and American irons, without any great loss of the business built up in the latter.

On the increased Canadian trade in finished material from the United States, some comment was made in the extract we quoted last week from the paper read at the annual meeting of the General Mining Association of the Province of Quebec, by Geo. E. Drummond, vice-president of the association. He referred to the fact that a few years ago nearly all of Canada's requirements in manufactures of mild steel were supplied by Great Britain, but that latterly, owing to low prices on the American side, all the steel plates, and a considerable proportion of angles and other shapes, came from Pittsburg. The effect of this competition, in the displacement not only of British steel products, but also those from Belgium and Germany, which have been a large share of Canada's imports in structural lines, has been seen more especially in Ontario. In the territory supplied from Montreal, plates constitute the bulk of the purchases of finished product from the United States. Beams, channels and rails, we are advised, are still to be had at a lower price from the other side of the water. One result of this increasing American competition in Canada is this lament in a recent issue of the London *Iron and Coal Trades Review*:

> Hitherto we have, more or less, regarded Canada as the Benjamin of the colonial family. We have believed that the Canadians would still be true to the mother country, and that we should still send to Canada all the iron and steel that the

Dominion required to import. Alas for human expectations! * * * As we have repeatedly stated in these columns, no country on the American continent is at all likely to export iron to Europe on a regular business scale yet awhile. But it is quite otherwise with the competition with us in Canada on the part of the United States. It is in actual force at the moment. It is increasingly difficult to meet, and it threatens to overwhelm us. How is it done? The United States have quite as heavy a freight to pay before they can get to Montreal as English exporters. They may probably have to pay even more from the principal centers of production. But the truth is that the Americans appear determined in commercial, as well as in political, matters to set up the standard of "America for Americans." There is reason to believe that the Canadian markets are being cultivated at the present time at a considerable sacrifice. Whether it will ultimately pay the Americans to keep up this game is quite another affair.

What adds to the bitterness of this Canadian experience is the fact that British iron and steel masters are having it duplicated for them by German and Belgian competitors in nearly every colonial and neutral market, which they have been wont to regard as peculiarly their own.

ACID OR BASIC OPEN-HEARTH PLATES.

In our issue of Jan. 31, referring to late contracts for plates let by lake shipbuilding companies, this observation was made: "The contest between producers of acid open-hearth and basic open-hearth plates has developed fresh discussion on the reliability of the two processes, in connection with recent contracts at lake shipyards. Both sides have had their victories and the campaign of education is being pushed with vigor among shipbuilding companies." For the most part the vessel-building companies who are buyers of steel, have maintained a neutral attitude. In one instance, however, specifications have been made that evidently leaned toward basic material, since "open-hearth steel," without qualification, was called for, and the question thus became merely one of price, with the result a foregone conclusion. In this connection interest attaches to a communication, under Cleveland date, which appears in the current issue of the *Marine Review*, and which our contemporary says is from "the head of one of the largest shipbuilding plants on the lakes." We reproduce most of it and call attention to the evidence it affords that the manufacturers of basic open-hearth material have not left their customer without reasons for his faith, other than the consideration of lower price. The arguments bear traces of the collaboration of steel works and shipyard authorship, with a preponderance of the former, but are none the less interesting on that account. Reference is had in the opening paragraph to an article in the same paper, some time ago, reproduced in these columns, claiming greater uniformity and reliability for steel made by the acid open-hearth process:

"The leading points sought to be made in the article under review are, first, that the basic open-hearth process is a new and untried one, recently resorted to for the purpose of obtaining, at a reduced cost, an open-hearth steel suitable for ship plates. Secondly, that basic open-hearth steel is inferior to the acid open-hearth, for the alleged reason that a cheaper class of raw materials is used in its production. While it is true that the basic process is a comparatively new one in this country, it has nevertheless been in successful operation at some mills for a number of years in the production of plates for boiler and other purposes, in which it had made for itself a recognized place long before its use for hull construction in ships was contemplated, which has only been within the past year or two. On the other hand, however, the process has been practiced for many years in Europe, where it has a firmly established and high reputation as a first-class steel. Exhaustive investigations of it were made by the admiralties of the leading European countries—France, Belgium, Germany, Austria and Russia—which proved in every case that it is fully as good as the acid open-hearth, and in a number of cases the results obtained were actually better, so that it has been uniformly adopted, a fact, which in itself, would seem to be conclusive proof of its merit. It is particularly worthy of consideration that our own government is freely using this steel in the construction of its new navy, and it is a well known fact that the government requirements are of the most rigid and severe character, which could not be fulfilled by steel other than the best.

"As regards the second point, that in its manufacture the grades of raw material used are poorer than those used in the acid process, I must, without wishing to question the integrity of any steel maker, flatly contradict this statement, which can not be substantiated, as the following facts will show: In the acid open-hearth process materials are selected which are sufficiently free from phosphorus and sulphur to produce the desired results in the finished material. It is a well known fact, which I think the acid steel maker will admit, that his process will not eliminate any of the phosphorus and sulphur impurities contained in the melting stock, and that, in fact, the finished product will contain a higher percentage of these impurities than did the average of the raw materials used, owing to the phosphorus and sulphur being taken up by the metal and the oxidation of the silicon, iron, etc., making the weight of the steel produced less than the weight of the charge. The manufacturer therefore takes these facts into consideration and selects his raw materials accordingly. The procedure of the basic manufacturer is precisely the same, and he is forced to use the best grades of materials when the requirements of the finished product are such as are met in specifications for boiler and ship plates. But there are reasons why basic open-hearth steel is even more reliable than the acid. It is generally recognized that phosphorus and sulphur are the impurities which cause the most trouble in steel making and working, and since it is impossible to remove them by the acid process it is certain that all these impurities contained in the raw materials will be found in the finished steel. The basic process being essentially a refining one, these impurities are to a large extent removed, leaving the steel purer chemically.

"In view of these facts, and with carelessly drawn specifications as to the quality of the steel, I would certainly prefer to trust the basic open-hearth, because of the greater facility with which the lower phosphorus and sulphur can be obtained. The writer of the article in question refers to certain instances where basic steel has failed without apparent cause, and immediately draws the conclusion that this was due to the fact that it was basic, as if anyone who knows anything about steel making would pretend to claim that like cases have not happened with acid steel. The claim that basic steel is being generally excluded by the best engineers is at variance with the statistics, which will show rather the reverse, and that much more of basic steel has been used in bridge and similar structures than acid steel, within the few years in which open-hearth steel has been used for this work. I realize fully that bad steel can be made by any process, and in this I again agree with the author of the article, and would like to impress upon the minds of consumers of ship material the importance of carefully considered specifications, which will require a material sufficiently low in phosphorus and sulphur to insure purity, chemically, as well as physical requirements, that will produce proper tensile strength and ductility. With these precautions and careful testing, the consumer need not be afraid of open-hearth steel by whatever process made, and without them he should be suspicious of any material, whether iron or steel."

THE New York Tribune Almanac for 1895, numbering 380 pages, comes to us, revised, rearranged, freshened up to date and enriched by new features. The book contains an almost unlimited array of statistics on every conceivable subject which concerns the whole people of the United States, with much which interests only the political parties. There is no partisanship in the contents of the Tribune Almanac, and one can accept with confidence its statistics of coinage, circulation, foreign trade, elections, population, pension, revenues, banking, legal holidays, and hundreds of other things treated.

ORIGINALITY IN FOUNDRY LITERATURE.

TO THE EDITOR OF THE IRON TRADE REVIEW:

It is now generally admitted that foundry literature has done more than anything else to advance the art of founding and give to the molder better tools, light, ventilation and more shop comforts. Fifteen years ago, most molders scoffed at the idea of literature being of any value and they were not entitled to censure, for at that time what works were to be had were not from practical men, and with a few exceptions had only the effect of disgusting one possessing any knowledge of the trade. Little by little a few practical writers gained the attention and commendation of every-day molders until today no one depreciates the value of foundry literature, and it is eager y sought by all interested in foundry work. In the first days of practical literature, pride was shown in being original, and new ideas were given due credit. This originality existed in treating of subjects foreign to what any other writer had presented and classifying them in a meritorious manner. Copyists and imitators did not then exist.

To the writer's mind, there is today no necessity for copying or serving a rehash of one's own writings. There still exists abundance of material for original work, but as in the beginning it requires some brains, experience and labor to compile, classify and make it instructive and of value to practical men. It was with much gratification that the writer observed an editorial in the last issue of your paper referring to the subject of plagiarism, for of late there has been too much work in this direction. This abuse should be handled without gloves. A tolerationof such an evil reacts injuriously on the progress and welfare of founding.

One thing which I believe is somewhat responsible for the comparatively small volume of valuable and practical writings is the tendency of the technical press to create a higher standard of literature. We now often find mechanical papers more or less burdened with algebra or charts which the ordinary mechanic knows nothing of, or the man long out of college has forgotten how to work out, even had he the time to do so. Presenting mechanical matters to the majority in this way scares off the practical man and leaves a wide door open for the plagiarist to offer to the press distorted compilations of others' research and writing, carrying on their face an appearance of originality.

I for one have more expectation of good from an uncouth, yet reliable, original article than from any so-called high-class writings. I generally find that in imparting valuable information the former far surpasses the latter in articles pertaining to molding. Not long ago I read a splendidly written article, on which the writer must have spent much time and care in arranging and polishing its English. The article was a very lengthy one and was presented before an association for the purpose of giving information; and it did so, but in a way not to be expected of the paper, for the few lines which possessed a semblance of interest referred the molder to a certain book to obtain the information which one would have expected to be fully outlined in the paper presented. I acknowledge a little advertising, in return for the information given at the cost of much labor to the writer, is allowed; but when a paper is all advertisement and practically no information, it is time, I think, to draw the line, for this class of literature is as great a handicap to foundry progress as is out-and-out plagiarism. The building up of a practically valuable literature demands that a check be given to all such evil tendencies.

THOS. D. WEST.

ROBERT MCCURDY and Tod Ford, well known iron manufacturers of Youngstown, O., responded respectively to the toasts, "Youngstown Banks and Bankers" and "Our Manufacturing Interests" at the banquet of the Youngstown Board of Commerce, Feb. 18. John E. Shaw, of Pittsburg, who is active in the work of promoting the proposed Ohio River-Lake Erie canal, spoke to the subject "Railroad Transportation."

A WESTERN tin plate manufacturer, whose plant is now being operated under the compromise scale, states that with the present selling price his profit is but eight cents per box. He says also that a slight decline in selling prices, or a moderate advance in the cost of billets, will destroy entirely this small margin.

SHOP AND FOUNDRY NOTES.

New Method of Casting Iron.—A description of a new method of casting iron so as to avoid blow-holes and cinders recently appeared in *La Revue Industrielle*. The usual method of filling the molds more than full, so that the lighter substances may float to the top and collect in the portion to be subsequently cut off does not entirely remove them. M. Van Riet, to give the impurities time to separate from the melted iron before it runs into the mold, sets on top of the flask a sort of little bath tub, lined with some refractory substance, and presenting three cylindrical hollows of different sizes communicating with each other by tangential channels. The iron is poured from the ladle into the larger hollow, where it whirls around for a time and then escapes into the second basin, where it revolves in the opposite direction. From this it reaches the third compartment, which has a hole in the bottom, and, as this hole is set over the pouring hole in the flask, the iron then runs out into the mold. When the metal is poured into the large end of the tub it is seen to whirl around until the surface is covered with the larger particles of impurity, which collect near the middle, the centrifugal force developed by the whirling serving to separate the purer and more liquid iron from the spongy scoriæ.

New Flux for Cast Iron.—The new method of fluxing cast iron, which goes under the name of the Sentinelli process, though not entirely a novelty, is being introduced to the foundry trade in England. The compound consists of an alloy of sodium and iron formed by bringing iron and common salt into contact at a high temperature. The ferro-sodium so produced contains about 85 per cent of the iron, holding metal sodium in solution, if the term may be used. This latter has a powerful affinity for sulphur and phosphorus, and combining with these carries them out into the slag. The flux may be added either to the cupola or may be placed at the bottom of the casting ladle. The former plan is said to be preferable. When used in either of these ways the metal in the ladle shows the characteristic yellow flame of sodium on its surface, and its temperature appears to be increased. Indeed, when placed at the bottom of the ladle, the reaction takes place with considerable violence. It is claimed that, by the use of this alloy, the amount of sulphur can be reduced to about one-tenth of its original value, and the phosphorus is also reduced, the cost of purification being ½d. per cwt.

Cast Iron in Railroad Work.—Some master mechanics have more confidence in cast iron than is possessed by many railroad engineers. Col. Brown, Master Mechanic of the Delaware, Lackawanna & Western Railroad, at Scranton, Pa., is one of the "cast-iron men," as he uses that material for guides on a number of the heaviest locomotives on his division. The cross-head is enlarged to take the big guide-bar made necessary by the use of cast iron. No broken guide-bars have been reported yet, and the cost of manufacturing is much less than the expense of forging and planing up steel or wrought-iron rods.

Various Conditions of Cogs.—When the cogs are new, and in good shape, says a mechanical writer, they appear quite uniform in shape and solid. Now if the teeth of the two meshing gears are set so that a piece of paper can be run between them, and the paper not get cut, it shows that the cogs mesh just about right. The cogs do not meet the runs and "grind," hence there is no jarring, wearing and loss of power. The cogs when set like this will run smoothly and easily, and can operate for years. But it is frequently difficult to find cogs so set. We often notice that they are adjusted too far apart. The gears will run along perhaps for months in this condition, but as most of the work falls upon the ends of the cogs, it follows that there must be excessive wear. After a certain period, it will be seen that the cogs are worn down. Of course, when gears get into such condition, it is only a matter of a short time when new ones will have to be put on, as the loom will run unsteady when the cogs are worn down too much. Sometimes, instead of wearing, the cogs will "ride," and in short order a tooth is broken off. To break off one cog means that others adjoining it will come off sooner or later. A hole may be drilled in the rim and a pin put in as a substitute for the broken tooth, but about the best way to do is to remove the gear and put on a new one, and set it right.

DEMAND FOR GOOD FOREMEN.

From many branches of manufacture the complaint is now being made that there is a growing scarcity of good material for foremen, and that the scarcity promises to become a famine. The present foremen are usually men above fifty years of age, who in their youth served apprenticeships to their trades, before that custom had become obsolete, and before the machine had so largely superceded the skilled artisan. The younger generation of workmen are operatives, skilled only in the use of the specialized machine which they attend and almost wholly without that broad, practical knowledge of all the details of the work which is essential to its supervision.

This complaint is widespread. It comes in fact from all descriptions of factory life where the machine now occupies the place of the mechanic—from the machine shop, from the carriage factory, from the textile manufactory. The numerous advertisements in the want columns of our papers under the heading "Good Foremen Wanted" is another evidence of the demand.

It can readily be perceived that the ordinary operative is unfitted to become the ideal foreman of the shop, for the reason that his education has been neglected, he has not learned his trade. Notwithstanding the revolution in the method of manufacture there is still need for the skilled mechanic as a foreman. The machines may do the routine machine work admirably, but they cannot supply the brain work which is essential in conducting the detail work of a shop and which must be based upon a thorough knowledge of the trade in question.

The demand for good foremen existing, how can it be filled? The answer is not clear, but it must be worked out in the near future like any other problem. The trade school partially solves the difficulty, but not entirely, for while the training there is good, and extremely helpful to the young men who pursue the course of instruction, it is scarcely thorough enough, as these schools are now conducted, in itself to fit the young graduate for the position of foreman in a shop. He needs experience also.

But by whatever manner the demand for the skilled mechanic may be filled, there seems no doubt that there are many opportunities here for intelligent and ambitious young American workmen to fit themselves for positions of responsibility and worth.—[Industrial World.

Special Expedient for Rolling Mill Rolls.

The eccentric rolls used in a number of rolling mills hitherto are open to the objection that a separate one must be employed for each thickness of metal to be turned out. To obviate this difficulty, M. Dietz has devised a roll of variable eccentricity. The apparatus consists of two cylinders placed one above the other between two housing frames. The lower cylinder is concentric and is driven by a pinion fixed in the shaft; the upper is free and may be rendered eccentric to any degree below a certain limit without its shaft being removed. The special feature of the device consists in making all of the shaft of the free roll, except its bearings, of rectangular cross section, but with straight lateral edges inclined relatively to the axis of the bearings; the cylinder having a corresponding rectangular cavity from end to end. The shaft being inserted in the cylinder, a longitudinal movement of the latter upon the former increases or diminishes the eccentricity.—[La Metallurgie.

STEEL, which has supplanted masonry in so many kinds of structures, will be employed in the construction of a dam across the Santa Anna river in Southern California. The chief problem seems to be protection of the steel from rust. The advantages claimed for it are reduced cost, rapidity of construction, and greater security under the action of seismic disturbances.

THE stocks in the yards of the American Pig Iron Storage Warrant Co. have been increasing of late. On Jan. 1 the total was 111,200 tons. In that month there were put in yard 12,500 tons and withdrawn 500 tons, leaving the total Jan. 31, 123,200 tons.

WHY SELL COKE BELOW COST?

The Connellsville district of Pennsylvania is chiefly controlled by the Frick Coke Co. (Carnegie Steel Co.), and, of course, pays wages in cash, though it may also be indirectly interested in the mine stores. As nearly all the coal mined in this district is converted into coke, there is no opportunity to recoup in profits on coal what may be lost on coke.

The cost of mining and loading in the Connellsville district is 70c per 100 bushels of 76 lbs., or say 22c per ton, and to this must be added at least 20c per ton for tramming, pumping, general expenses, etc., making the cost of coal 42c per ton on the railroad or the ovens, exclusive of royalty, interest on investments, etc. This does not differ much from the cost in Pocahontas or at the best mines on the Chesapeake & Ohio Railroad.

Coal lands in the Connellsville district are, however, much more expensive, and are worth fully $1,000 per acre, which would make the cost of the coal equivalent to a royalty of 20 cents per ton of coke. We may make up the actual cost of coke about as follows, figures which are based on actual costs in well-managed works, counting wages at $1.25 per day though at Connellsville they are somewhat higher:

	Per ton coke.
Cost of land, or royalty	$0.20
Cost of mining and loading 1.55 tons coal	0.65
Repairs and renewals of Bee Hive ovens	0.13
Drawing ovens	0.17
Charging and leveling ovens	0.05
Loading coke in box cars	0.12
Cleaning yard, watchman, bricking doors, etc	0.03
Water, tools, hose, etc	0.05
Superintendence and general expenses, office, interest, etc	0.10
	$1.50

It is doubtful if any coke is produced in Pennsylvania, West Virginia or Kentucky at much less than this figure, when all the legitimate expenses are included. Why is Connellsville coke sold below cost? If it were sold only to the Carnegie Steal Co. at 85c to $1 a ton it might be said that what went out of one pocket went into the other; but it is sold to that company's rivals in the steel trade. It has been suggested that the object may be to "freeze out" other mines in the Connellsville district; but this would be a very expensive way to attain a monopoly of the district, and even that would not give a monopoly of the coke trade, for other districts are increasing output rapidly, even at present prices. It can hardly be true that this is the object. The expectation that prices of coke must in time, under these conditions, rise at least to an average cost of production, is natural, but there is also some uncertainty as to what the permanent future cost will be.

The adoption of bye-product-saving plants at our coke ovens is very desirable, and is a much too long delayed improvement. By this means the cost of coke can be reduced even below the present selling prices, and since it is certain that bye-product-saving will shortly become general in this country, the cost of coke is not likely to attain permanently any figure which would be justified by the present cost of its production.—[Engineering and Mining Journal.

WM. L. HEARNE, one of Wheeling's most prominent citizens, died at the McLure House in that city, Feb. 13, in his 77th year. In 1867 he went to Wheeling and embarked in nail manufacturing, taking an interest in the firm of Dewey, Vance & Co., then owning the Riverside works. He gradually enlarged this interest, and in 1874, on the reorganization and incorporation of the Riverside Co. he was made general manager. He held this position until 1876, when he transferred active supervision to his son, Frank J. Hearne. The latter has been for several years the capable general manager of the Riverside interests. Mr. Hearne also acquired an interest in the Woodward Iron Co., Woodward, Ala. In 1877 he was elected a delegate to the West Virginia legislature. His liberality in charity and church circles was well known. Three years ago he led in the establishment of Hearne Tabernacle, an undenominational church prominently located in Wheeling.

WIRE NAIL producers in Germany are making an attempt to combine. In the United States no success has yet attended like efforts in this industry. The meeting referred to was held at Hagen, in Westphalia. Only 27 firms were represented out of a total of about 60 concerns, but a committee was formed to further the proposed combination.

BESSEMER INGOTS AND RAILS IN 1894.

General Manager James M. Swank, of theAmerican Iron and Steel Association, has just sent out, through the *Bulletin*, the following interesting statement of the production of Bessemer steel ingots and rails in the United States in 1894. The figures include a small quantity of standard rails and a larger quantity of street and electric rails which were made by manufacturers from purchased blooms. The statistics for ingots include the production of the few Clapp-Griffiths and Robert-Bessemer plants, and also the production of steel castings by all Bessemer works:

The total production of Bessemer steel ingots in 1894 was 3,579,101 gross tons, against 3,215,686 gross tons in 1893, showing an increase in 1894 of 363,415 tons, or 11.3 per cent. The following table gives the production of Bessemer steel ingots in each half of 1894 and the total production in that year as compared with the total production in 1893:

States—Ingots.	First half 1894. Gross tons.	Second half 1894. Gross tons.	Total 1894. Gross tons.	Total 1893. Gross tons.
Pennsylvania	1,129,559	1,206,439	2,335,998	2,126,220
Illinois	252,080	329,460	581,540	314,829
Ohio	171,048	191,764	362,812	348,141
Other States	114,767	183 984	298,751	426,496
Total	1,667,454	1,911,647	3.579,101	3,215,686

The total production of all kinds of Bessemer steel rails, including light and heavy and street and mine rails, in the United States in 1894, was 1,014,034 gross tons, against 1,129,400 gross tons in 1893, a decrease in 1894 of 115,366 gross tons, or 10.2 per cent. The production of Bessemer steel rails in 1894 was composed of 899,120 gross tons rolled by the producers of domestic ingots and 114,914 tons rolled from purchased blooms.

The following table shows the total production by States of Bessemer steel rails of every description in 1894, both by producers of Bessemer ingots and by rolling mills using purchased blooms:

States—Rails.	From ingots of their own make. Gross tons.	From purchased blooms. Gross tons.	Total. Gross tons.
Pennsylvania	606,866	108,069	714,935
Illinois	225,869	437	226,306
Other States	66,385	6,408	72,793
Total	899,120	114,914	1,014,034

The following table shows the production by States of Bessemer steel rails by the producers of Bessemer ingots in each half of 1894, and the total production of the year compared with that of 1893, rails rolled from purchased blooms not being included in the table:

States—Rails.	First half 1894. Gross tons.	Second half 1894. Gross tons.	Total 1894. Gross tons.	Total 1893. Gross tons.
Pennsylvania	284,061	322,805	606,866	639,431
Illinois	95,955	129,914	225,869	232,200
Other States	19,388	46,997	66,385	164,662
Total	399,404	499,716	899,120	1,036,353

The rails reported to us which are definitely known to have been rolled for street and electric railways amounted in 1894 to 155,196 gross tons, against 133,423 tons in 1893, and 111,580 tons in 1892. All the street and electric rails rolled in 1894 were made in Pennsylvania.

We have received from the Craig-Reynolds Foundry Co., of Dayton, O., a very nicely gotten up booklet descriptive of the Dayton railway crossing gate manufactured by this concern. It contains half-tone illustrations of the works of the company and of several of the gates which it has recently erected at various places, together with a description of the gates.

The failure is reported from Duluth of Wm. McKinley, the well-known iron mine and lumber capitalist, one of the pioneer operators on the Mesabi Range. The assignment was precipitated by judgments for large amounts. The liabilities are put at $500,000.

ILLINOIS STEEL CO.'S BUSINESS LAST YEAR.

The annual meeting of the stockholders of the Illinois Steel Co. was held at the offices of the company in the Rookery, Chicago, last week Wednesday. In presenting his annual report, President Jay C. Morse stated that the first steel plate made by the company at its new mills at South Chicago was rolled the day before the meeting. The plate mill has been over a year in construction, and has cost a large sum of money. The report went on to say that there had been a continual decline in prices and serious interference with the continuous and economical operation of the company's plants by the labor troubles of the past year, notably those in the Connellsville coke district and the railroad strike. The works at South Chicago were put in operation March 19 and continued to run throughout the remainder of the year; the Joliet and Milwaukee works ran practically all the year, but not to their full capacity. The Union Works were idle during the entire year, while those at North Chicago were nearly idle, only one blast furnace being in operation, and the fitting shop on structural material during part of the year.

Operation of the property in 1894 represented a larger tonnage of material received and of finished products manufactured than in 1893. It also represented the employment of a larger working force. The only direct addition to the property account made during the year was by the building of the open-hearth plant and the plate mill, now practically finished.

There were received during the year 2,339,370 tons of raw material, and shipments were made of finished product amounting to 563,446 tons. Cars of material handled, 88,793. The amount paid in wages and salaries was $3,071,394.95, and the average number of men employed per day was 5,069.

A statement of accounts presented showed gross profits from all sources amouniing to $558,093.10, out of which was paid $660,000 interest on bonds less $132,514.32 interest and discount received on money loaned, etc., amounting to $527,485.68, leaving a balance of net profits of $30,607.42. Applying this to the reduction of the deficit of $349,472.60 carried forward from the preceding year, left a deficit of $318,865.18 on Dec. 31, 1894. The condensed balance sheet shows the following:

CREDITS.

Capital stock outstanding	$18,650,635.00
Five per cent debenture bonds 1910	6,200,000 00
Five per cent debenture bonds 1913	7,000,000.00
Dividend scrip outstanding (due in 1913)	93,013.67
Accounts payable (since paid)	922,150.24
Interest due Jan. 1, 1895 (since paid)	922,150.24
Interest accrued, not yet paid.	93,051.40
Reserve funds for replacements, etc.	182,532.41
Total	$33,296,382.72

DEBITS.

Net cost of real estate, buildings and machinery to Jan. 1894	$17,256,422.09
Net additions in 1894	203,372.29
Railroad stocks and bonds	2,630,000.00
Materials and supplies on hand	4,984,537.09
Cash on hand	923,282.34
United States bonds at cost	683,187.50
Call and short time loans on approved securities	651,526.26
Bills receivable	870,643 08
Accounts receivable	1,285,566.58
Securities on hand	3,414,585.56
Other investments	74,394.75
Profit and loss (deficit)	318,865.18
Total	$33,296,382.72

The following were elected as a board of directors: N. Thayor, Boston; F. Bartlett, Boston; M. Rotch, New Bedford; A. J. Forbes-Leith, Fyvie, N. B.; H. H. Porter, Marshall Field, N. Williams, J. C. Morse, W. R. Stirling, R. Forsyth, and F. Hinton, Chicago. The executive committee elected consist of A. J. Forbes-Leith, W. R. Stirling, Jay C. Morse, Robert Forsyth, Francis Hinton. The following officers were elected: President, Jay C. Morse; first vice-president, W. R. Stirling; second vice-president, Robert Forsyth; secretary and treasurer, H. A. Gray; general councel, E. Parmalee Prentice; general sales agent, Julian L. Yale; purchasing agent, L. D. Doty.

On application of creditors, the court at Akron, O., has ordered the sale on March 28 of the plant of the Akron Iron Co., which went into the hands of J. A. Long as receiver about a year ago. The appraised value is $350,000. A syndicate of creditors will purchase the plant.

The Iron City Foundry, Pittsburg, owned by L. M. Morris & Co., burned Feb. 20, with $30,000 loss, fully insured. The fire caught from the explosion of a barrel of benzine and linseed oil.

A TIN PLATE WORKER'S STATEMENT.

TO THE EDITOR OF THE IRON TRADE REVIEW:

In your issue of Jan. 3, "Cinders," who evidently has some idea of the tin plate trade, endeavors to prove some erroneous statements regarding this trade in the United States. In the first place, I shall admit that some of his expressions are just and fair, while he misuses other facts to suit his own purposes. He first of all makes a very loose statement regarding the relation of supply and demand. "There are now enough tin plate factories in America to fully supply home consumption." His mathematics must surely be very far beyond, or after, the present age; hence his figures do not accord with facts. [It should be noted that the article in question qualified the statement that mills now built or planned could supply the domestic demand, by adding, "without counting what might be imported by those who must have certain grades of Welsh tin, because they never used any other kind and will not believe that their own countrymen can produce material equal in quality."—Ed.]

South Wales, Monmouthshire and Gloucester contain about 508 mills all told, which with an easy average of 200 boxes a week per turn, or 600 boxes per mill, will make 304,800 boxes a week; three-fourths of which amount is consumed in the United States. In the States as the trade stands at present, we have nine mills at Elwood, Ind., six at Gas City, a four at Irondale, with a similar eight at St. Louis, four at New Castle, four at Baltimore, two at Atlanta, four in Montpelier, nine in Demmler, two in Cambridge, O., four in Harrisburg, four in Anderson, two in Brooklyn, two in Ellwood, Pa., and a few more of little moment. We can safely say that there are no more than 70 mills all told in the country; and at present there are no more than forty of these working. Even allowing the seventy to be running and giving an average of 50 cwt. to each turn, or about 48 boxes, makes 144 boxes to each mill or 750 each week, making a total of 32,500 boxes a week, even if all the mills which are now in the course of erection, work at full capacity. Therefore if America consumes three-fourths of 304,800 boxes, where in the light of common sense is the basis of "Cinders'" statement, that American factories can supply all the tin plate the country requires?

His statement that an American workman can turn out as good work and even better, than a skilled foreign workman, is too far astray to discuss. Can "Cinders" point out a single mill in the United States which is running without the aid of foreign skilled labor? If his statement is true, why should two of the most influential and zealous Americans make a special trip to Wales last Summer in search of skilled tin plate workmen? We have no prejudice nor any hard feelings against any loyal American; rather the contrary. But we do contend for justice and truth.

In the third place, your correspondent says that the present scale is too high. Are the present and past dividends of the American tin plate manufacturer too high? Is not the labor of the workingman, which he contributes to the progress of civilization, valuable, and entitled to a return proportioned to that of capital? Certainly we believe in a scale that benefits both master and man, and one scale only, that of justice.

Let me quote again: "There are enough tin mills under construction today in the United States, if constantly operated, to produce more than known requirements." Compare the figures given above, and think for yourself how erroneous is the impression given. The product of 70 American mills is more, according to "Cinders," than the product of 500 Welsh mills. The operators of these 500 mills in Wales succeeded in maintaining the rate of wage for 40 and 50 years, yielding at the same time a dividend varying from 10 to 40 per cent to the manufacturers. But here the trade is murdered in its infancy, through ignorant managers and agents. The Amalgamated Association, we must admit, has assisted the operators, by its inability and rank ignorance of the trade, practical and theoretical.

The assertions of "Cinders" in comparing the stands and rolls of this country and Wales, give plain evidence of his deficient knowledge of tin plate making in South Wales. So far as the capacity of the Welsh hot rolls and standards is concerned, we would have him know that rollermen have accomplished more and better work with the Welsh style of working, than any American or Welsh-American, rather, will be able to make for some time to come. The workmen in South Wales have a well organized union themselves, and to cope with the times and protect the market against gluttonness, they have been continually reducing the make. Hence the present low rate of production, to which "Cinders" has reference. Rollermen have been known to turn out over 300 boxes a week on certain occasions, in many factories in South Wales, but where has this amount of work been done in the States, even with the boasted improvement in machinery referred to? The cost of rolls, stands, etc., is according to weight, and with the oft repeated breakages, the cost of tin plate making in this country is considerably increased; and therefore the burden, according to "Cinders," must come on the workman.

Let him compare the tin plates of Gas City, Ind., with those of other home mills as regards quality, and any rational being will be convinced at once what kind of machinery is best adapted to produce tin plates.

In regard to the statements relating to improvements on machinery for pickling, doubling, etc., we must admit that we are at a loss to understand him. Where in the States is a particular pickling machine improved upon? In the line of tinning machines also, his observation has evidently been out of the ordinary line. Are there any tinning machines in the States besides Morewood's, Thomas & White, Taylor & Struvy, and Edwards? I know very well that these patents can be bought cheaper at present, but will "Cinders" undertake the honest task of saying why? Let us again inform him that most of these were failures in Wales long ago, except the very original Morewood roll machinery. Out of 109 mills in Carmarthenshire and the borders of Glamorgan, there are only 10 of the Thomas & White working at present as compared with 224 Morewood stacks; and this statement holds even where the patent was first introduced. Surely experts with an experience of 30 and 40 years in tin plate making, ought to know which is the best and most calculated to make a marketable article.

The assertion that a rollerman can make $10 a turn, after the reduction recently proposed by manufacturers, is far out of the way. As a matter of fact his wages cannot average more than $6.50.

Promising further comments if called for, I am

Yours Truly, I. R. S.

German Pig Iron Production in 1894.

The Association of German Iron and Steel Makers publishes the following statistics as the production of pig iron in Germany during 1894: The output of pig iron in the German Empire (including Luxembourg) amounted in December last to 498,233 tons, an increase of 16,324 tons on the previous month, and of 49,592 tons on December, 1893. The December output included 146,217 tons of puddling and spiegel iron, 38,115 tons of Bessemer pigs, 239,239 tons of Thomas pigs, and 74,632 tons of foundry pigs. For the whole year 1894 the output of raw iron has been 5,559,322 tons, against 4,953,148 tons in 1893, an increase of 606,174 tons, or 12.3%.

MR. A. G. SINCLAIR, late president of the New York Emery Co., having been forced out of the combination, has decided to stay on the outside, but to remain in the same line of business. He has connected himself with the Tanite Co., of Stroudsburg, Pa., and solicits for that company the trade which in former times he controlled as salesman for the Ashland Mills, and later for the New York Emery Co. and the American Emery Mills. Mr. Sinclair is one of the oldest salesmen in the emery trade, and as a practical manufacturer of emery he knows something of the intrinsic quality of that article. Knowing the needs of the trade he offers it confidently to old customers and friends.

NOTICE has been given of the dissolution, on Jan. 28, of the firm composed of Ernest G. Rippel and James T. King as partners in the machine and foundry business under the name and style of Rippel & King, Canal Dover, O. James T. King retires. Mr. Rippel has purchased all the assets and assumed all the liabilities of the late firm and will carry on the business in the same place under the style of the Rippel Mfg. Co. A specialty is made of blast furnace and rolling mill castings.

NEW DOTY PUNCHES AND SHEARS.

The accompanying engravings represent three new types of punches and shears designed by the New Doty Mfg. Co., Janesville, Wis. The first, Fig. 1, is made in 10 sizes, and is intended for use in boiler and sheet metal works. The machine is powerfully back geared, so as to do easily the work for which it is designed. The boxes for the eccentric and balance wheel shafts are cast on the frame, and the eccentric and eccentric shaft are cast in one piece. The machines vary in size from a ¼-inch hole in ¼-inch plate to a 1-inch hole in 1-inch plate, and the depth of jaw varies from two inches to 37 inches. The punches and dies can be fitted to the machine without stopping the fly wheel. The motion is controlled by a clutch operated by a hand lever or treadle, as may be desired. The machine can be used to punch flanges, as the distance from the front to the center of the punch can be made but ¼-inch. The stripper is adjustable to 0.001 part of an inch. These machines are arranged so that shearing blades can be put on in place of the punch and die, when they can be used for shearing plates to the full depth of the throat.

The shear shown in Fig. 2 will cut ⅝ by 5-inch flat iron. This machine is made in six sizes, in all of which the knives for flat or round iron are independent of each other, and both sets of knives are at all times ready for use. The round iron knives are made the reverse of the iron and therefore do not flatten it in cutting. The boxes and eccentric are formed as in the belt power punch. The eccentric is so designed as to allow a short stop after each stroke in order that the work may be adjusted for the next stroke. This permits the operator to take advantage of the next stroke. The machines are adapted to be run at 25 or more strokes per minute, the speed being governed by the ability of the operator to handle the material.

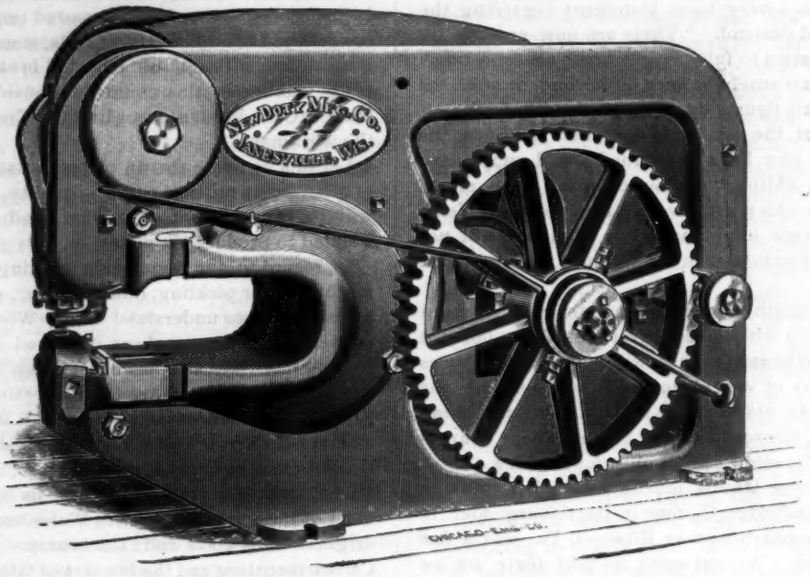


FIG. 1.—BELT POWER PUNCH.

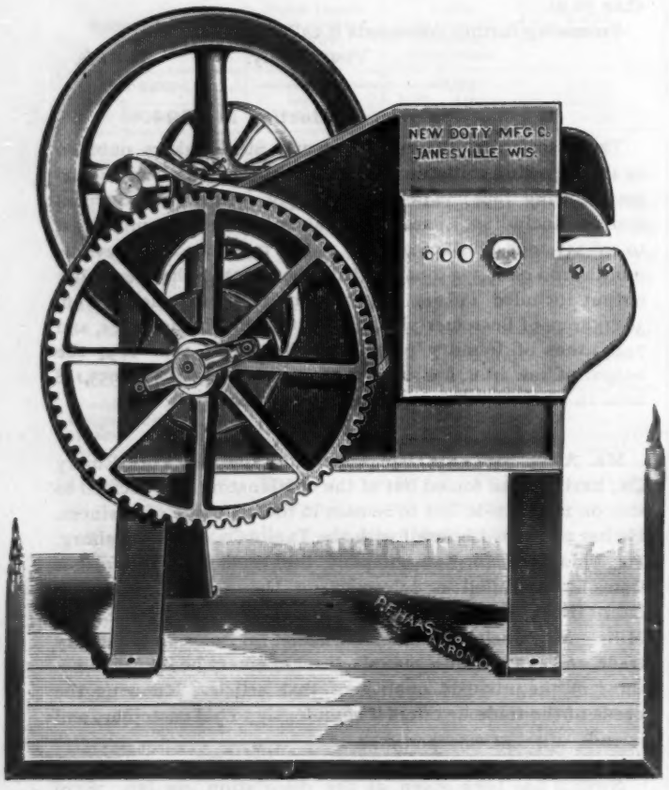


FIG. 2.—BELT POWER SHEAR.

FIG. 3.—BELT POWER BEVELING SHEAR.

The beveling shear, Fig. 3, is made in two sizes—the smaller to bevel plates ½-inch or less in thickness and the larger to bevel plates one inch or less. These machines will bevel throat sheets, the flanges of domes, and sheets bent to a curve, in addition to beveling straight sheets. There is no tipping up of the metal while being cut, and all tendency to twist or

move sideways is overcome by the adjustable stop shown in the engraving. This machine is like the others in the construction of the eccentric.

CONDITION OF BLAST FURNACES OF U. S.*

February 1, 1895.

Location of Furnaces.	Charcoal.					Bituminous or Coke.				
	Total No. of Stacks.	In Blast.		Out of Blast.		Total No. of Stacks.	In Blast.		Out of Blast.	
		Number.	Weekly capacity	Number.	Weekly capacity.		Number.	Weekly capacity.	Number.	Weekly capacity.
New England	11	2	185	9	829	...	...	...	...	...
New York	6	0	0	6	725	5	2	2596	3	3335
Pennsylvania	13	2	125	11	790	5	2	1723	3	2000
Pittsburgh	.....	.....	.....	.....	.....	24	21	34311	3	5570
Spiegel	.....	.....	.....	.....	.....	2	2	935	0	0
Shenango Valley	.....	.....	.....	.....	.....	16	15	16229	1	600
Jun. and Con. Vals	.....	.....	.....	.....	.....	17	8	8407	9	4120
Maryland	4	0	0	4	310	5	0	0	5	5955
Virginia	4	0	0	4	210	23	11	5764	12	6640
North Carolina	.....	.....	.....	.....	.....	2	0	0	2	745
West Virginia	.....	.....	.....	.....	.....	4	2	2334	2	1095
Ohio—Mahoning Val	.....	.....	.....	.....	.....	12	8	10070	4	5370
East, Cent. & North	.....	.....	.....	.....	.....	16	12	13302	4	4133
Hocking Valley	.....	.....	.....	.....	.....	6	1	229	5	2250
Hanging Rock	10	2	108	8	725	11	8	2308	3	605
Kentucky	3	0	0	3	865	6	2	686	4	1770
Tennessee	8	2	390	6	1830	13	6	3173	7	4260
Georgia	3	1	263	2	375	2	0	0	2	1200
Alabama	13	1	102	12	3015	38	16	13817	22	13755
Indiana	.....	.....	.....	.....	.....	2	0	0	2	275
Illinois	.....	.....	.....	.....	.....	19	9	16278	10	12895
Michigan	20	5	1699	15	4663	.....	.....	.....	.....	.....
Wisconsin	5	1	846	4	1120	4	2	1784	2	1540
Minnesota	.....	.....	.....	.....	.....	1	0	0	1	665
Missouri	2	1	275	1	305	3	0	0	3	2280
Texas	4	1	127	3	845	.....	.....	.....	.....	.....
Oregon	1	0	0	1	280	.....	.....	.....	.....	.....
Colorado	.....	.....	.....	.....	.....	3	1	928	2	1598
Total char. and coke	107	18	4120	89	16887	239	128	134574	111	82656
Total anthracite (New York, New Jersey, and Lehigh, Schuylkill, Upper and Lower Susquehanna and Lebanon valleys.)	130	33	20317	97	39984	.....	.....	.....	.....	.....

SUMMARY.

Fuel.	In Blast.						Out of Blast.			
	Number.			Weekly Capacity.			Number.		Weekly Capacity.	
		Month Previous.	Year Previous.		Month Previous.	Year Previous.		Month Previous.		Month Previous.
Charcoal	18	24	18	4,120	5,395	4 057	89	84	16,887	16,968
Anthracite	33	37	28	20,317	21,182	14,940	97	94	39,984	38,132
Coke	128	127	85	134,574	148,800	89,324	111	114	82,656	80,206
Total	179	188	131	159,011	175,377	108,321	297	292	139,527	134,406

*The above table is condensed from the *American Manufacturer*. The tables of the *Iron Age* show in blast Feb. 1, 19 charcoal furnaces, with 4,416 tons weekly capacity, instead of 4,120: 36 anthracite, with 21,691 tons weekly capacity, instead of 20,317: and 126 coke, with 141,184 tons weekly capacity, instead of 134,574. Total, 181 active furnaces, with a total capacity of 167,291 tons, instead of 159,011, as above.

United States and Great Britain as Coal Producers.

One of the *memorabilia* of the coal industry during the past year is the fact that the United States have practically overtaken the United Kingdom as a coal producing country, and may, in the present year, be a good deal ahead of us. When one considers the history of the coal industry in the two countries this must seem a remarkable result to have achieved. In 1870 the United States only produced one-third of the coal output of this country; in 1881 the United States produced about one-half of the quantity of coal produced here; and now the two countries have practically come abreast of each other. The advance of the United States would almost certainly have been much greater than it has been had it not happened that petroleum and natural gas came very largely to take the place of coal in American markets; but now that the natural gas supplies have become partly exhausted, the development of the coal resources of the country is likely to proceed at an accelerated pace when the next industrial boom takes place.—[Times, London.

INDUSTRIAL SUMMARY.

New Buyers in the Market, and Some of Their Wants:—

[If you are in need of machinery of any description, please notify *The Iron Trade Review* and we will put you in communication with our advertisers at once.]

Gustafson Bros., Sequachee, Tenn., are in the market for foundry supplies.

"A 916," *Sun* office, Baltimore, Md., asks for a screw turning lathe, 16″ to 18″ swing, 6′ to 8′ bed.

Kelly's Creek Coal Co., Mammoth, W. Va., will buy screens, wire rope, steel rails, mine cars, drum, etc.

R. D. Cole Mfg. Co., Newnan, Ga., will buy a second-hand pipe threading machine, six inch, in good condition.

J. E. Wandell & Co., Henderson, Tenn., are reported in the market for two 66x16 boilers and one 150 h. p. automatic engine.

The Jamestown (Pa.) Paint & Varnish Co. will buy another ore crusher; a second-hand one, if in first-class condition, will answer.

The International Lathe Co., of Philadelphia, is negotiating to establish at Parkersburg, W. Va., a plant for the manufacture of its patent wood working lathe.

The Jeffersonville (Ind.) Corrugating & Roofing Co. has been incorported with a capital of $10,000 to manufacture iron and steel roofing. P. C. Donovan is president and R. M. Martin, secretary and treasurer.

Sealed proposals will be received at the office of the supervising Architect, Washington, D. C., until 2 P. M., March 12, 1895, for all the labor and materials and fixing in place complete the low pressure, steam heating and ventilating apparatus, including elevator power boiler, etc., required for the U. S. Postoffice and Custom House building at Jacksonville, Fla

New Construction:—

The plans for the Big Four shops, at Wabash, Ind., to replace those burned, have been completed. As now designed, they will cost $95,000.

The Newton Machine Tool Works of 24th and Wood streets, Philadelphia, are now building a new shop, 100x102 feet in size and three stories high. The structure will be built with an opening 32 feet wide extending through the center of the building to the roof and with galleries on each side. Some new and heavy machines will be installed. The shop will be lighted by electricity and heated with hot air. A 20-ton traveling crane will command the entire building.

Additions, Enlargements, Removals, Etc.:—

Moore Bros., saw manufacturers, Jamestown, N. Y., will erect a new iron-clad building, 50x24 feet.

An addition is to be erected at the works of Henry Disston & Sons, Philadelphia, which will be set apart for the testing of saws.

All the machinery and material at the Newark (N. J) works of the Westinghouse Electric & Mfg Co., have been removed to the company's new plant at East Pittsburg. It is said that the labor-saving machinery and improved methods of transferring material will greatly decrease the working force.

The Murray Iron Works Co., of Burlington, Iowa, has made a considerable number of improvements to its plant, consisting of an addition to the boiler shop, a new erecting shop, 116 feet long, in which is a traveling crane of 10-ton capacity. Other improved machinery has been put in, which makes the plant one of the foremost of its kind in the country.

The contract for the additional tin mill and rolling mill buildings at the New Castle, Pa., tin plate plant, have been let to the Shiffler Bridge Co. Each of the two steel buildings will be 360 by 110 feet. The contract for the three compound engines was given to the Bass Foundry & Machine Works, of Ft. Wayne, Ind., and for the rolls to the Garrison Foundry Co., of Pittsburg. When completed the tin plate plant will have 16 mills in the plate department, and the works will employ 1,000 hands.

Fires and Accidents:—

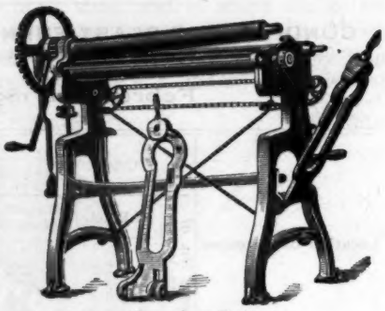
The plant of the Eureka Mower Co., Utica, N. Y., was damaged by fire $25,000, Feb. 5.

The plant of Munson Bros., manufacturers of mill machin-

Machines for Working Sheet Metal.

Patent Gap Shears, Especially designed for Squaring, Trimming and Slitting. 6 to 18 inch throat for Slitting Wide Sheets. Complete for Tin or Iron, o 14 gauge. Seven Styles of various lengths HAND AND POWER.

Rear Side.



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1436 Monadnock, - - CHICAGO.

ery, at Utica, N. Y., has been destroyed by fire. Loss about $75,000, of which $30,000 is on patterns. Insurance, $34,075.

The Medina Foundry Co.'s plant, at Medina, O., burned, with a loss of $6,000; partly insured.

General Industrial Notes:—

The Andrews Bros. Co.'s mill and furnace at Haselton, O., resumed this week.

The Spearman Iron Co., of Mercer, Pa., has been granted a charter of incorporation, with a capital stock of $300,000.

The general offices of the Johnson Co. have been removed from Cleveland to Lorain, O. The Company still maintains a Cleveland office, however.

The Morton Tin Plate Co., Cambridge, O., have placed an order for two five-roll Morewood tinning sets with the Lloyd Booth Co., Youngstown, O.

At Sharon, Pa., J. J. Spearman and E. A. Wheeler, who recently bid in the plant of the Aschman Steel Casting Co., will start it up, employing 125 men.

The Youngstown (O.) Bridge Works have been running overtime recently, getting out crane girders for the Shaw Electric Crane Co., of Muskegon, Mich.

McClure & Amsler, of Pittsburg, are finishing the work on the new blast furnace for the Bellaire (O.) Nail Works. This plant is fitted up with all modern devices.

The Arethusa Iron Works, New Castle, Pa., are putting in two sets of cold rolls, and two additional hot mills, while new foundations are being put under the main building.

Niagara furnace, of the Tonawanda (N. Y.) Iron & Steel Co., entered on Jan. 19, the fifth year of blast on the present lining, and there appears to be six or eight months of wear still left in the lining.

The James E. Thomas Co., of Newark, O., has recently added a No. 6 Whiting cupola to its foundry, which enables this concern to largely increase their output of ingot molds and similar castings.

The Cleveland Steel Casting Co., Cleveland, is doing excellent work at its new plant, making castings of all sizes up to 12 tons. A moderate supply of orders, including some railroad work, is on hand.

The Lakeside Nail Co., Hammond, Ind., with office in the Rookery, Chicago, resumed operations, Feb. 14, with a fair supply of orders, enough to secure a steady run for some time.

At Pittsburg a temporary order was made in court permitting Receiver Henry Warner, of the Linden Steel Co., to operate the plant until March 2. A hearing will then be had to determine whether the order shall be permanent.

The Tudor Iron Works, East St. Louis, are ready to resume, but none of the striking employes, who have gone out to support the rollers in their strike, have reported for duty. The management says that the places of the o d men will be filled.

A rule was granted on George S. Griscom, receiver of the Moorhead-McCleane Co., Pittsburg, Feb. 16, to show cause why the New York Life Insurance Co. should not be allowed to obtain a judgment for $350,000 against the company on a mortgage made to the plaintiff in 1886.

The Park Iron & Steel Co.'s mill, at Muncie, Ind., has been leased to Jno. D. Briggs, proprietor of the Muncie Much Bar Mill, and a stockholder in the Park Iron & Steel Co. The mill is now working with a small force, which will be increased as the machinery is brought into good working shape.

Charles Forster, secretary and general manager of the Iroquois Furnace Co., Chicago, and Henry Walker, Jr., of Pittsburg, were in Youngstown, O., last week, looking over the machinery of the old Himrod furnace. It is probable that the machinery will be purchased and shipped to Chicago.

The Superior Steel Co., Pittsburg, manufacturers of hot and cold rolled steel, is adding an annealing furnace to its plant. A pair of engines, 18x22, are being put in to replace smaller engines. The department recently added by this firm for hardening and tempering steel is now in successful operation.

A creditors' committee bought the real estate of C. Aultman & Co., Canton, O., at receiver's sale, Feb. 16, for $150,000, and the personal property at the same figure. It is said that the

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reorganization will be perfected in 30 days and the plant will start up again on thresher engines and other agricultural machinery.

At a steel foundry of the General Electric Co., Wm. P. Darling, manager, Lynn, Mass., the average production of finished steel castings during the past six months has been 650,000 pounds per month. The steel has all been made with careful reference to chemical formula best suited to electrical purposes.

The wages of the employes of the New Castle (Pa.) Wire Nail Works have been placed on a quantity basis instead of by the day. The men will be required to handle more machines and perform additional work without extra compensation. About 500 are affected. The laborers have been asked to take a reduction of from 10 to 15 per cent.

The limited partnership heretofore known as Wallace, Banfield & Co., Ltd., Pittsburg, operating the Irondale Rolling Mills, Irondale, O., and manufacturers of tin and terne plate, has been dissolved, Jno. C. Wallace, Wm. Banfield and W. E. Foale being appointed liquidating trustees. The business will be conducted by the above named parties, under the firm name of Wallace, Banfield & Co.

A Wilmington, Del., dispatch of Feb. 13, says: In the United States Court today a bill was filled for Henry Whitely, of Philadelphia, asking for the appointment of a receiver for the McCullough Iron Co. Judge Wales appointed the Girard Life Insurance Co., of Philadelphia, and Mr. Whitely, of Philadelphia. The company owns rolling mills at Northeast and Rowlandville, Md., and at Wilmington, Del.

The Alabama Steel Works Co., Birmingham, Ala., refused the proposition made by the Bessemer Land Co., to purchase the Fort Payne steel mill, and the plant will not be removed to Bessemer as was given out recently. Good ore is found at Fort Payne, and some recent coal developments there have been very satisfactory, so the company has decided, instead of selling, to operate the mill at its present location.

The annual meeting of stockholders of the Maryland Steel Co. was held at Sparrow's Point, Feb. 13. The following directors were re-elected: Maj. Luther S. Bent, Frederick W. Wood, Col. Walter S. Franklin, Rufus K. Wood and E. C. Felton. The directors organized by electing Frederick W. Wood president, and Edmund N. Smith, of Philadelphia, secretary and treasurer. Mr. Smith occupies the same position with the Pennsylvania Steel Co.

The Consolidated Barb Wire Co., of Lawrence, Kan., has secured the wire mill of the defunct Clark & Winsor Wire & Spring Co., at Joliet, Ill., and is now drawing wire. The company will manufacture barb wire as soon as it can put up the machines, and it is also the purpose to manufacture wire nails. The company has a large plant at Lawrence, Kan., recently enlarged and greatly improved, but finds that some of its trade can be more conveniently handled from Joliet.

The Barr Pumping Engine Co., of Philadelphia, has just secured the contract for two pressure pumping engines 24 and 40x12x56, for the Johnson Co.'s new plant, at Lorain, O. It is also building a triple expansion, high duty, pumping engine for the city of Abington, Mass., under a duty contract of 120,000,000 foot pounds, and reports water works contracts from Three Rivers, Mich., Marlboro, Mass., Greenville, Pa., and a very substantial increase in orders for small pumps.

The Westinghouse Machine Co.'s steam engines find a market in the remotest corners of the earth. A 150 h. p. compound of the latest type was recently shipped to Alaska. The trade of this company in foreign countries holds up well, orders having just been completed for three 150 h. p. compounds to Mexico; 200 h. p. compound to Spain; 300 h. p. compound to France; 150 h. p. compound to Buenos Ayres; 800 h. p. compound to Havana, Cuba, besides a number of smaller engines to Russia and elsewhere.

At a meeting of the stockholders of the Jas. P. Witherow Co., held in Pittsburg, last week, a report was presented showing that the financial condition is sufficiently favorable to warrant the resumption of work at the company's plant in New Castle. The plant has been idle for some time, but operations are expected to resume in the spring. The following directors were elected: Isaac Reese, H. W. Atwood, George Best, John Q. Denny, of Harrisburg, and James P. Witherow. The board elected Isaac Reese president and George Best treasurer.

The Crane Iron Co. reorganized in Philadelphia last week by electing Robt. E. Hastings, Wm. S. Pilling, Robt. F. Kennedy, J. A. Harris, Jr., Gordon Munges, Leonard Peckitt and Geo. M. Troutman as directors. The recent purchasers have placed the new organization in possession of the deed for all properties, and as soon as officers are elected deeds will be delivered to individuals who have arranged for purchases, as it is the intention to dispose of all outstanding properties and confine the business to the manufacture of iron. It has been decided to abandon the Philadelphia office and remove the principal office to Catasauqua, Pa.

The Bass Foundry & Machine Works, of Fort Wayne, Ind., has the contract for the boilers for the addition to be built to the steel and tin plate mill of New Castle, Pa. They have also the contract for a 1,000 h. p. Cross compound condensing engine for the Geo. C. Gill Paper Co., of Holyoke, Mass.; a 500 h.

p. condensing engine for the Ocean Grove Camp Meeting Association, of Ocean Grove, N. J., to be used for driving the electric plant at the association park. They will also furnish the boilers and the jack shafting. They also have the contract for two 500 h. p. Cross compound condensing engines for the Jersey City, Hoboken & Rutherford Electric Street Railway. They are now shipping a 32x60 and a 26x48 rolling mill engine to the Beaver Tin Plate Co., of New Lisbon, O., and are setting up the largest Corlis engine ever erected (being 2,000 h. p.) at the plant of the New Castle Steel Rod Mill, New Castle, Pa.

Electric vs. Steam Locomotive.

There are few sights more fitted to convey an idea of power than a steam locomotive just starting or arriving; the whistling and roaring of the steam, the throbbing in the smokepipe, the tremor of the ground, lead the mind to expect a proportional effect, as from some animate monster. An electric locomotive, in a similar situation, is an embodiment of apathy and harmlessness, in its appearance. There is neither throb nor roar no steam to scald the wayside passer, nor cindery, sooty smoke to blind the eyes, choke the breath, or stain immaculate linen. In action, however, the electric machine, still comparatively quiet in its movement, often rolls along with a tigerish purr, or a hum as of a vast swarm of angry bees, with now and then a lurid flash,—weird evidence of the mysterious power, invisible as the wind, that lurks in the miles of wire coiled round and round the magnets and armatures of the huge electric motors concealed in the dark interior of the massive frame.

Last year, when two of these locomotives were under construction at the works of the General Electric Company in Lynn, there was one day a rare sight. It became necessary to test the comparative power and economy, pound for pound, of an electric and a steam locomotive. The two huge machines —one the bombastic and terrifying consumer of water and coal, the other a silent mass of iron—came gently together on a branch track of the Boston and Maine Railroad leading to the electrical works. Coupled with each other by a strong bar, each monster attempted to drag the other from its position—the steam sometimes, and than the electric machine, appearing triumphant. This struggle for mastery was watched by many spectators, and with intense interest by those concerned in the manufacture of the two kinds of locomotives. —[George J. Varney, in March Lippincott's.

THE February number of the *Review of Reviews* contains a profusely illustrated article on the Cotton States and International Exposition, contributed by Hon. Clark Howell, editor of the Atlanta *Constitution*. The article covers the industrial situation in the Southern States in a comprehensive manner, and shows that the exposition is international in a broad sense of the term. It is to be printed also in the European edition which circulates in every civilized country. The American and foreign editions together have a circulation of about 250,000 copies, and this article will do much to give the Exposition world-wide publicity. The text is artistically illustrated with handsome cuts of the different buildings and excellent half-tone portraits of the officers.

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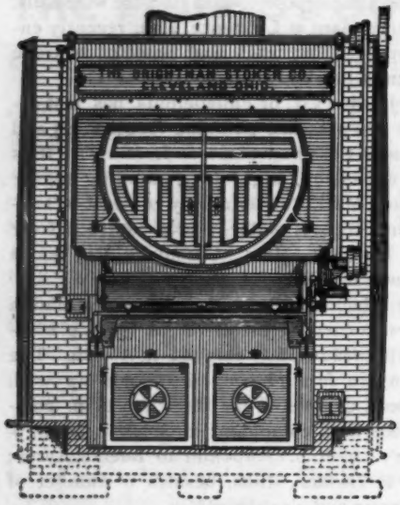

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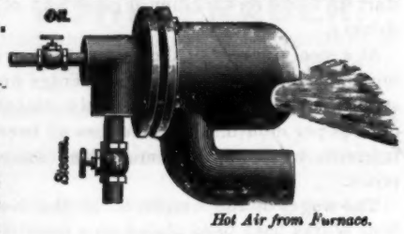

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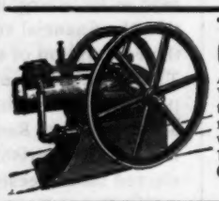

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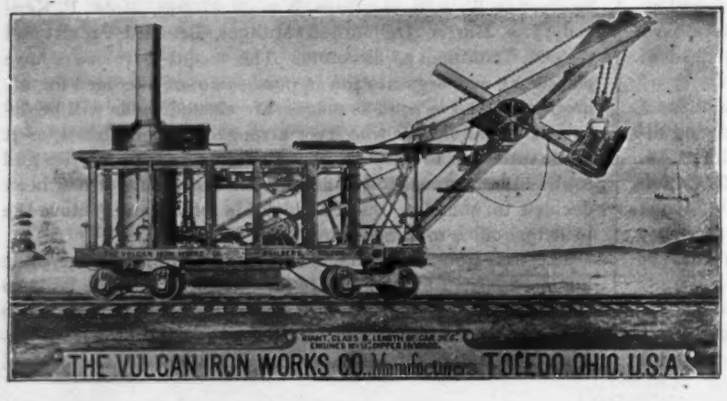

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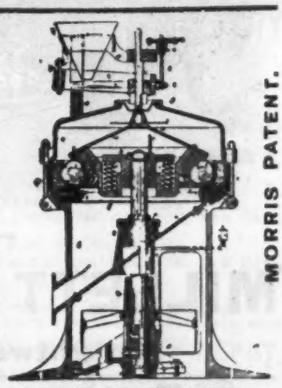

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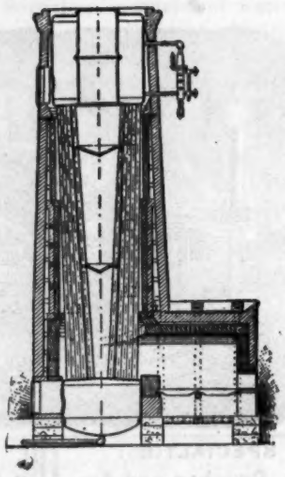

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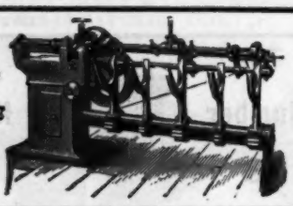

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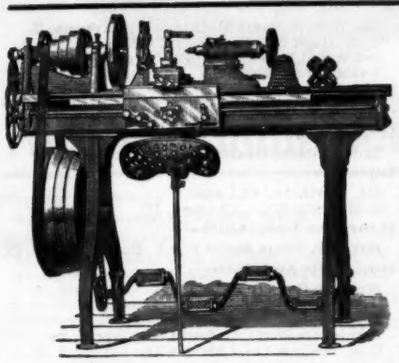

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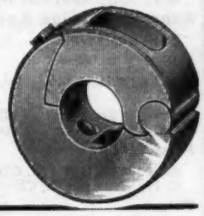

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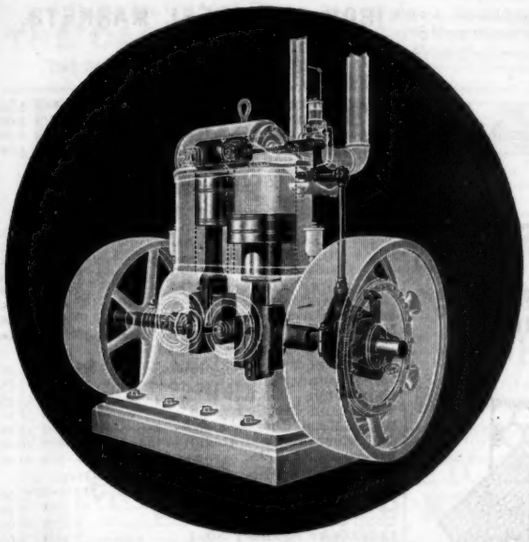

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†Springfield Cupola Co.	—
Stevens, F. B.	28
Stilwell-Bierce & Smith-Vaile Co.	2
Stowe, Fuller & Co.	15
Sturtevant Co., B, F.	2
Swarts Metal Co	1
Sykes Iron Roofing Co.	19
†Tabor Mfg. Co.	—
Tanite Co.	28
Taylor & Boggis Foundry Co.	1
Thurman Fuel Oil Burner Co.	16
Timolat, J. G.	19
Tod, Wm. & Co.	26
Toledo Machine & Tool Co.	27
Totten & Hogg I. & S. F'dry Co.	24
Union Mining Co.	15
United States Heater Co.	28
Upson Nut Co.	25
Van Duzen Gas Engine Co.	22
Vulcan Iron Works	16
Warren, Webster & Co.	27
Wertheim, Ed.	1
Westinghouse Machine Co.	21
Westmoreland Fire Brick Co.	23
Wheeler Boiler Co.	26
Wyckoff, Seamans & Co.	17

PERFORATED SHEET METALS

OF EVERY DESCRIPTION,

FOR SCREENING PURPOSES.

THE HENDRICK MFG. CO., Ltd.,

CARBONDALE, PA.

The Industrial Centre of Chicago

offers **Free Factory Sites** and other inducements.

If you are seeking a new location it will pay you well to investigate the merits of our proposition.

Chicago Heights Land Association

M. H. KILGALLEN, Gen'l Mgr. CHICAGO

PYROMETERS

Edward Brown,

ESTABLISHED 1860.

311 WALNUT ST., PHILADELPHIA

Manufacturer and Patentee

OF THE

Hot Blast Pyrometer.—The only stationary Pyrometer now in use durable over 700 degrees.

Mercury Revolution Indicator.—Centennial Exhibition Medal. Accurate for all time.

Annealing Oven Pyrometer—to 3,000 degrees—of 1893.

Tin-plating Pyrometer—of 1894.

Mercury and Steam Gauges.

GASOLINE ENGINES

Stationary & Portable

ALL SIZES.

Dwarfs in size and Giants in Strength.

Costs only 10 cents a Day per H. P. to run them, & scarcely any attention.

EVERY ENGINE GUARANTEED

Write for particulars and testimonials.

THE VANDUZEN GAS & GASOLINE ENGINE CO.

CINCINNATI, O.

Mention this paper when you write.

Subscribe for The IRON TRADE REVIEW.

IRON AND STEEL MARKETS.

IRON ORE.

[On Lake Erie docks.]

No. 1 Specular, Bessemer	3.00@ 3.35
No. 1 Bessemer hematite	2.75@ 3.00
Hematites No. 1 non-Bessemer	2.00@ 2.50
No 1. Specular, non-Bessemer	2.35@ 3.00

PIG IRON.

CLEVELAND (f. o. b. cars):	
Bessemer	$10 00@$10 25
No. 1 Strong Foundry	11 00@ 11 25
No. 2 Strong Foundry	10 00@ 10 25
No. 1 Gray Forge, red short	9 10@ 9 25
No. 2 Gray Forge, neutral	9 00@ 00 00
No. 1 American Scotch	11 25@ 00 00
No. 2 American Scotch	10 25@ 00 00
Lake Superior Charcoal	12 50@ 13 00
PITTSBURG:	
No. 1 Foundry	$11 25@$11 75
No. 2 Foundry	10 25@ 10 75
Gray Forge	9 50@ 9 75
White and Mottled	9 00@ 9 25
Warm Blast Charcoal	18 00@ 19 00
Cold Blast Charcoal	22 00@ 26 00
Bessemer	10 65@ 00 00
CHICAGO (reported by our representative:)	
Lake Superior Charcoal	$13 00@$13 50
Local Coke Foundry No. 1	10 25@ 10 50
Local Coke Foundry No. 2	9 75@ 10 00
Local Coke Foundry No. 3	9 40@ 9 65
Local Scotch Foundry No. 1	10 25@ 10 50
Local Scotch Foundry No. 2	9 75@ 10 00
Local Scotch Foundry No. 3	9 50@ 9 75
Southern Coke No. 1	11 00@ 11 25
Southern Coke No. 2	10 00@ 10 50
Southern Coke No. 3	9 75@ 10 25
Southern No. 1 Soft	10 25@ 10 50
Southern No. 2 Soft	10 00@ 10 25
Southern Silveries No. 1	11 50@ 11 75
Southern Silveries No. 2	11 25@ 11 50
Jackson Co Silveries	15 50@ 16 00
Ohio Silveries No. 1	14 00@ 14 50
Ohio Silveries No. 2	13 00@ 13 50
Ohio Strong Softeners	12 50@ 13 00
Alabama Car Wheel	17 50@ 18 00
Malleable Bessemer	11 00@ 11 50
Coke Bessemer	11 00@ 11 50
CINCINNATI (reported by Rogers, Brown & Co.)	
Southern Coke No. 1, Foundry	$ 9 75@$10 50
Southern Coke No. 2 and No 1 Soft	9 25@ 9 50
Hanging Rock Coke, No 1	12 00@ 12 00
Hanging Rock Charcoal No. 1, Fdy	16 00@ 17 50
Tennessee Charcoal No 1	14 00@ 14 50
Jackson County Stone Coal No 1	14 50@ 15 00
Southern Coke, Gray Forge	8 50@ 8 00
" " Mottled	8 25@ 8 75
Standard Alabama Car Wheel	15 75@ 16 50
Tennessee " "	15 50@ 16 75
Lake Superior " "	14 00@ 14 00
BUFFALO (reported by Rogers, Brown & Co.)	
No. 1 Foundry Strong Coke Iron Lake Superior Ore	$11 00
No. 2 Foundry Strong Coke Iron Lake Superior Ore	10 50
Ohio Strong Softener No. 1	11 10
Jackson Co. Silvery No. 1	15 50
Lake Superior Charcoal	13 75
Southern Soft No. 1	11 00
Hanging Rock Charcoal	18 50
ST. LOUIS (reported by Rogers, Brown & Mencham):	
Southern Coke No 1	$10 25@$10 50
Southern Coke No 2	9 75@ 10 00
Southern Coke No. 3	9 25@ 9 50
Southern Gray Forge	9 00@ 9 25
Southern Charcoal No. 1	14 00@ 14 50
Missouri Charcoal No. 1	12 50@ 13 00
Ohio Softeners	14 00@ 14 50
Lake Superior Car Wheel	15 50@ 16 00
Southern Car Wheel	16 00@ 16 50
Connellsville Coke, St Louis	4 40

OLD RAILS AND SCRAP METAL.

[Prices paid by mills.]

	Gross Tons
Old iron rails	$12 50
Old steel rails	10 00
	Net Tons
No. 1 R. R. wrought scrap	$ 9 00
No. 1 wrought scrap	8 00
No. 1 Machine cast scrap	8 00
Iron axles	14 50
Axle turnings	7 50
Wrought turnings (free from cast)	6 50
Cast borings	5 50
Uncut wrought iron boilers	4 00
Steel boiler plates	8 00
Grate bars	5 50
Pipes and flues (clean)	7 00
Tank iron	7 50
Hoop and band iron	6 00
Sheet iron	5 50
Wrought drillings	6 50
Malleable iron	8 00

STRUCTURAL MATERIAL.

Beams and Channels (f. o. b. mill)	1.25c@1.35c
Angles	1.20c@1.25c
Tees	1.35c@1.45c
Universal Plates	1.20c
Sheared Plates	1.30c

MERCHANT IRON AND STEEL.

[List prices out of store.]

Flat Bar.

1½ to 4 by ⅜ to 1 inch	1 30
4½ to 6 by ¾ to 1 inch	1 35
1½ to 6 by 1⅛ to 2 inch	1 50
1¼ & 1⅜ by ⅜ to ¾ inch	1 35
1 & 1⅛ by ¾ to ½ inch	1 40
⅝, ¾, ⅞, by ⅜ to ½ inch	1 50

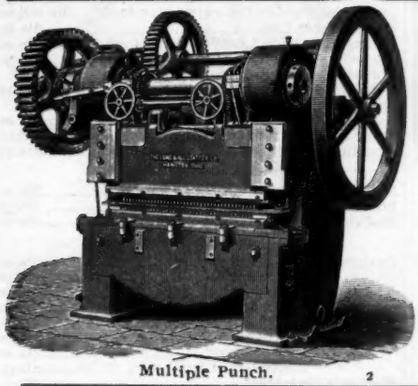
Frank P. Cady, Pres. and Supt.
Geo. H. Bowler, Sec'y and Treas.

THE CADY MFG. CO.

283 W. River St., CLEVELAND, O.

AUTOMATIC MACHINERY.
Power Presses, Dies, Drop Hammers, Punches and Shears, Wire Straighteners and Cutters, Wire Forming Machines
SEND FOR CATALOGUE.

PERFORATED METALS
OF ALL KINDS FOR
MILLING MINING AND AGRICULTURAL MACHINERY,
PERFORATED IRON, STEEL, COPPER, BRASS, TIN, ZINC, LEAD, ETC., TO ORDER.
LARGE AND VARIED ASSORTMENT OF SIZES. CORRESPONDENCE SOLICITED.
THE ROBERT AITCHISON. PERFORATED METAL CO.,
OFFICE, ROOM 510 265 TO 269 DEARBORN STREET, CHICAGO, ILL. WORKS SOUTH CHICAGO.


Multiple Punch. 2

—THE—
Long & Allstatter Co.
HAMILTON, O., U. S. A.
Manufacturers of Belt, Steam and Electrically driven
Power Punches and Shears,
for all kinds of Boiler, Tank and Structural Iron Work, Rolling Mills, Locomotive Shops, Car and Wagon Shops, Plow Shops, etc. Send for catalogue.

...H. LEITCH, PRES JOHN C. LEITCH, SEC. AND GENL. MAN. JOHN A. WILSON, TREAS.
WESTMORELAND FIRE BRICK CO.
MANUFACTURERS OF HIGH GRADE FIRE BRICKS.
PITTSBURG, PA.
Works and Mines, Westmoreland, Pa

PL DIXON'S PERFECT LUBRICATING GRAPHITE.
The most Marvelous Lubricant Known.
Used Dry, or Mixed with Water, Oil or Grease
NOT AFFECTED BY HEAT, COLD, STEAM OR ACIDS.
An Interesting and Instructive Pamphlet will be sent Free of Charge.
JOS. DIXON CRUCIBLE CO. Jersey City, N. J.

IRON CLAD PAINT CO.
Factory, 75 & 77 Central Way. Sec. & Treas., No. 3 Case Build'g.
CLEVELAND, OHIO.
ORDER DIRECT FROM THE
Iron Clad Paint Co.
And get the genuine article, and save liability of suit for using an article made in violation of the patents issued to Wm. Green, and now owned by this Company.
IRON CLAD PAINT is the most durable, most fire-proof and Cheapest Paint made.
FURNISHED both Dry and Ground in Oil
USED BY NEARLY ALL THE RAILROADS.
IRON CLAD PAINT

Subscribe for The Iron Trade Review, $3 per year.

Round and Square.

1 to 1⅜ inch	1 30
2 to 2⅜ inch	1 40
2⅜ to 3⅜ inch	1 55
3⅜ to 4 inch	1 80
4⅛ to 4⅜ inch	2 40
4⅜ to 5 inch	2 60

Oval.

⅜ to 1¼ inch	1 50
⅝ to ¾ inch	1 50
½	1 70
⅝	1 90

Half Oval and Half Round.

1¼ to 3 inch	1 85
⅜ to 1⅛ inch	1 65
⅝ to ¾ inch	1 90
½	2 05
⅝	3 15

Heavy Band.

1¼ to 6 by ¼ and 5-16 inch	1 40
1 to 1¾ by ¼ and 5-16 inch	1 45
¾ to ⅞ by ¼ and 5-16 inch	1 55
⅛ to ¾ by ¼ and 5-16 inch	1 80

Hoop Iron.

1 7-16 to 4, No. 13, 14, 15 and 16	1 85
1 7-16 to 2, No. 17, 18 and 19	1 90
1 7-16 to 2, No. 20	2 00
1 7-16 to 2, No. 21	2 10
1 7-16 to 2, No. 22	2 20
1⅛ to 1⅜, No. 13, 14 and 15	1 90
1⅛ to 1⅜, No. 16, 17 and 18	1 95
1⅛ to 1⅜, No 19 and 20	2 00
1⅛ to 1⅜, No. 21	2 10
1⅛ to 1⅜, No. 22	2 20
15-16 and 1 inch, No. 13, 14 and 15	1 85
15-16 and 1 inch, No. 16, 17 and 18	2 00
15-16 and 1 inch, No. 19 and 20	2 10
15-16 and 1 inch, No. 21	2 20
15-16 and 1 inch, No. 22	2 30
⅞, No. 13, 14 and 15	2 10
⅞, No. 16, 17 and 18	2 20
⅞, No. 19 and 20	2 30
⅞, No. 21	2 40
⅞, No. 22	2 50
13-16, No. 13, 14 and 15	2 30
13-16, No. 16, 17 and 18	2 30
13-16, No. 19 and 20	2 40
13-16 No. 21	2 50
13-16, No. 22	2 60
¾, No. 13, 14 and 15	2 30
¾, No. 16, 17 and 18	2 45
¾, No. 19 and 20	2 55
¾, No. 21	2 65
¾, No. 22	2 75
11-16, No. 13, 14 and 15	2 55
11-16, No. 16, 17 and 18	2 60
11-16, No. 19 and 20	2 70
11-16, No. 21	2 80
11-16, No. 22	2 90
11-16, No. 23	3 00
⅝, No. 13, 14 and 15	2 60
⅝, No. 16, 17 and 18	2 70
⅝, No. 19 and 20	2 80
⅝, No. 21	2 90
⅝, No. 22	3 00
⅝, No. 23	3 10
9-16, No. 13, 14 and 15	2 80
9-16, No. 16, 17 and 18	2 90
9-16, No. and 20	3 00
9-16, No. 21	3 10
9-16, No. 22	3 20
9-16, No. 23	3 30
7-16 and ½ inch, No. 13, 14 and 15	3 00
7-16 and ½ inch, No. 16, 17 and 18	3 10
7-16 and ½ inch, No. 19 and 20	3 20
7-16 and ½ inch, No. 21	3 30
7-16 and ½ inch, No. 22	3 40
7-16 and ½ inch, No. 23	3 50
⅜, No. 13, 14 and 15	3 50
⅜, No. 16, 17 and 18	3 60
⅜, No. 19 and 20	3 70
⅜, No. 21	4 00
⅜, No. 22	4 10
⅜, No. 23	4 25

Light Band.

1½ to 6 by ⅛ to 3-16 inch	1 60
1¼ to 6 by Nos. 11 and 12	1 65
1 to 1¾ by ⅛ to 3-16 inch	1 65
1 to 1¾ by Nos. 11 and 12	1 70
⅞ and 13-16 by ⅛ to 3-16 inch	1 80
⅞ and 13-16 by Nos. 11 and 12	1 85
¾ and 11-16 by ⅛ to 3-16 inch	1 90
¾ and 11-16 by Nos. 11 and 12	1 95
⅝ and 9-16 by ⅛ to 3-16 inch	2 05
⅝ and 9-16 by Nos. 11 and 12	2 10
½ by ⅛ to 3-16 inch	2 20
½ by Nos. 11 and 12	2 25

Wagon Box Iron.

⅞ inch, beveled edge, by Nos. 11 and 12	1 80
⅞ inch, " " " " 13 and 14	1 90
¾ inch, " " " " 11 and 12	1 95
¾ inch, " " " " 13 and 14	2 15

Sheet Iron.

No. 10	1 85
No. 12	1 90
No. 14	1 95
No. 15-17	2 05
No. 18	2 20
No. 20	2 30
No. 22-24	2 40
No. 25-26	2 50
No 27	2 60

Steel Boiler Plates—1-4 in. and Heavier.

Tank	1 60
Shell	1 85
Flange	2 10
Marine Flange	2 35
Fire Box	3 35

Above includes plates 90 inches wide.

90 to 96 in. wide	¼c. lb. extra
96 to 100 in. wide	1 c. "
100 to 104 in. wide	1¼c. "
104 to 106 in. wide	special

American Cast Tool Steel.

ROUND, SQUARE AND OCTAGON.	cts. lbs.
1 to 2 in. inclusive	68
9-16 to ⅞ in. "	68¼

THE ADAMS
WATER TUBE BOILER.

This Boiler is absolutely safe from explosion. Gives as much steam from the waste heat as any boiler made. Easy of access for cleaning and repairs. Furnishes perfectly dry steam. Occupies little ground space. Economical in first cost. Send for complete circulars giving list of users and testimonials, one of which is printed below.

The Falcon Tin Plate & Sheet Co., Niles, O., Aug. 18, 1893.

Chas. P. Adams, Esq.

Dear Sir: The three boilers of 225 H. P. each which you furnished us are working in every way satisfactory. We consider them as good steamers as any we have ever used. Up to the present time have spent nothing on them for repairs. Very respectfully,

The Falcon Tin Plate & Sheet Co.,
By Warner Arms, Pres't.

C. P. ADAMS.
807 The Cuyahoga. · CLEVELAND. O.

C. W. HUNT COMPANY,
45 Broadway, New York,
MANUFACTURERS OF
HOISTING AND CONVEYING MACHINERY

THE HUNT TIP CAR.

For moving all kinds of material in Steam Power Stations, Factories, Gas Works. Mines, Coal Yards, etc.
Tip Cars, Wire Rope, Barrows.
INDUSTRIAL RAILWAYS.

CHIME WHISTLES

A thing of beauty is a joy forever.

"LUNKENHEIMER'S" Single Bell Chime Whistles are warranted to please. Constructed on practical principles, producing harmonious sounds. Made in sizes from 2-in. to 10-in. in diameter, with or without valve. Also style for Locomotives.

New Catalogue of superior steam specialties gratis upon request. Consult dealer.

THE LUNKENHEIMER COMPANY
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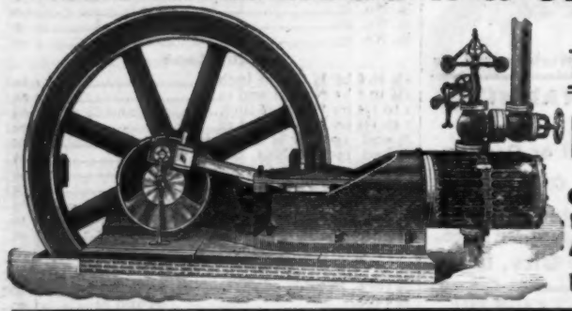
NEW YORK STORE, 81 JOHN ST.
EUROPEAN STORE THE LUNKEN VALVE CO. 35, ST DOVER ST LONDON S.E.

TOTTEN & HOGG I. & S. F'DRY CO.



Manufacturers of
The "Ætna" Rolling Mill
ENGINE,
Chilled and Sand Rolls and Rolling Mill Machinery.
Pittsburg Pa.

The Most Satisfactory Fire Brick That Money can Buy

Our well known brands

"O. K." Crown, "O. K." and "A"

They have no equal when used for the purpose designated. They are good, honest, well made Brick, made to hold your trade.

"Our Prices Are Just Right."

Oak Hill Fire Brick & Coal Co.,
Manufacturers,
OAK HILL, OHIO.

Subscribe for the Iron Trade Review, $3 per year.

7-16 to ⅜ and 2¾ to 3 in.	.09
3⅛ to 4 in.	.09½
⅞ to 11-16 and 4½	.10
⅞ to 6 in.	.10½
¼ to 9-32 and 6¼ to 7 in.	.11
16 in	.13

Flats.

	cts. ℔s.
2 to 9-16 in. wide by 2 to ⅝ thick	.8

Bessemer and O. H. Steel.

Machinery	base price,	1 80
Tire	"	1 85
Spring	"	2 20
Sleigh Shoe	"	2 20
Toe Calk	"	2 05
Cutter Shoes, tapered and bent	"	2 45

English Tool Steel.

Jessop's	15½c
Hobson's "Best"	15½c
" "Choice"	35c

Burden Boiler Rivets.

½, ⅝, 11-16 and ¾ inches diameter	3 70
Bridge ½, ⅝, 11-16 and ¾ inch diam	3 40

MACHINERY SUPPLY MARKET.

Anvils.

American	℔ 9@10
Wright's	℔ 12

Bellows.

Blacksmiths' Hill's	dis 40
Blacksmiths' Bullock's	dis 50&10
Moulders	dis 40@40&10
Hand	dis 40&10@50

Belting.

Boston Belting Co.'s standard	dis 70
" " " extra	dis 60&5
" " " best	dis 55
Cleveland Rubber Co. extra standard	dis 60&10
Hoyt's Short Lap	dis 45
Shultz Raw Hide Leather Belting, single	dis 40
Munson's Short Lap Single Leather	dis 50
Munson's Short Lap Double and Light Double Leather	dis 50&10
Shultz Raw Hide Leather Belting, Double and Light Double	dis 40
Standard, oak tanned	dis 50&10
Alexander Brothers' pure oak tanned	dis 45

Blowers and Exhausters.

B. F. Sturtevant's	dis 20
Boston Blower Co.,	dis 35
Buffalo	dis 40

Chucks.

Cushman's 4 Jaw Independent	dis 45
" Combination	dis 40
" Geared Scroll	dis 30
" 2 Jaw Brass Workers	dis 30
" Drill	dis 35
Wescott's Scroll Combination	dis 33⅓
" Independent	dis 40
" Little Giant Drill	dis 35
Horton's Universal	dis40
" Independent	dis 45
Whiton's Independent	dis 45
National Combination	dis 40
Sweetland "	dis 40
Almond Drill	dis 20
Morse "	dis 15
Skinner's Combination Lathe	dis 40&10
" Independent Lathe	dis 40&10
" Universal Lathe	dis 40&10
" Drill	dis 20

Cutters and Reamers.

Cleveland	dis 10@15
Pratt & Whitney	dis 10@15
Standard	dis 10@15
Morse	dis 15
Brown & Sharpe, Milling Cutters	dis 15
" " Gear Cutters	dis 15

Crowbars.

Cast Steel	℔ 3½
Iron, steel points	℔ lb 3

Drill and Drill Sockets.

Twist Drills	dis 50&10
Morse Taper and Straight Shank to 1¼"	dis 50&10
Morse Taper and Straight Shank Larger than 1¼"	dis 25
Drill Sockets	dis 25
Standard Twist Drills	dis 55@55&5
Cleveland " "	dis 55@55&5

Emery.

	No. 4 to No. 54 46 gr.	150 gr.	Flour, C. F F. FF.
Kegs, ℔	4½c	5 c	2½c
½ kegs ℔	4¾c	5¼c	2¾c
¼ kegs ℔	5 c	5½c	3 c
10 ℔ cans, 10 in case	6 c	6½c	5 c
10 ℔ cans less than 10	10 c	10 c	7½c

Emery Cloth and Paper.

Barder, Adamson & Co.	dis 50@50&5
H. H. Barton	dis 50@50&5

Emery Wheels.

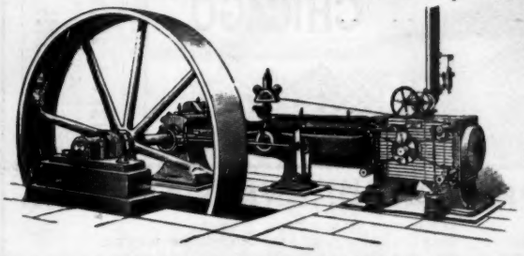
Detroit	dis 60@70
Norton's	dis 60@70
Grant	dis 60@70
Sterling	dis 60@70
Celluloid	dis 10&33⅓
Northampton	dis 55
Crystal	dis 65@70
Vitrified	dis 60@70
Vulcanite	dis 60&10
Hamden	dis 60&10@70
Cyclone	dis 60@60&10

Files.

Arcade	dis 60&10@60&10&10
Nicholson	dis 60&10@60&10&10
" X. F	dis 25
Kearney & Foot	dis 60&10@60&10&10
Black Diamond	dis 60&10@60&10&10
McClellan	dis 60&10@60&10&10
Disston's	dis 65@70

THE LANE & BODLEY CO.,

CINCINNATI, OHIO.



Engines.

ALL SIZES.

Simple and Compound

Shafting, Hangers, Pulleys.

Belt Elevators, Saw Mills.

Have You Any Sand?

On your castings that you want removed?

If so,

Will clean them better than any other method.

Try It.

Chicago Chemical Solution Mfg. Co.

41 Lakeside Bldg., CHICAGO, ILL.

Cleveland Union Station.

Pennsylvania Lines.

Foot of Bank Street.

TICKET OFFICES at Station, Euclid Av., Woodland Av., and Weddell House corner.

THROUGH TRAINS RUN AS FOLLOWS BY CENTRAL TIME
* Daily. † Daily, except Sunday.

FROM CLEVELAND TO	LEAVE	ARRIVE
Pittsburgh and Bellaire	† 7:00 am	†12:10 pm
Salem and Pittsburg	* 8:00 am	* 8:30 pm
Pittsburgh, Bellaire and East	†12:45 pm	† 6:25 pm
Philadelphia and New York	* 1:40 pm	*11:25 am
Baltimore and Washington	* 1:40 pm	*11:25 am
Alliance and Pittsburgh	* 1:40 pm	*11:25 am
Ravenna and Alliance	† 3:25 pm	† 9:50 am
Hudson and Ravenna	* 5:00 pm	* 8:25 am
Philadelphia and New York	*11:10 pm	* 5:25 am
Baltimore and Washington	*11:10 pm	* 5:25 am
Alliance and Pittsburgh	*11:10 pm	* 5:25 am

Mt. Vernon and Pan-Handle Route

FROM CLEVELAND TO	LEAVE	ARRIVE
Xenia and Cincinnati	* 8:40 am	* 5:15 pm
Akron and Columbus	* 9:40 am	*5:15 pm
Akron, Columbus & Zanesville	†2:45 pm	*12:10 pm
Akron and Orrville	† 3:25 pm	† 9:50 am
Columbus and Cincinnati	* 8:00 pm	* 6:55 am

Saturdays the 8:00 pm train will leave at 11:20 pm.

Valley Ry.

Depot foot of So. Water St.
City Office 137 Superior St.

	Arrive.	Depart.
Akron & Canton	*6:30 P M	*7:10 A M
Akron, Canton & Valley Jctn.	*10:10 A M	*3:15 P M
Valley Jctn. & Way Stations	†6:30 P M	†7:10 A M
Akron, Canton & Chicago	*8:00 A M	*6:30 P M
Wooster and Chicago	†2:45 P M	†11:00 A M
Wooster		*6:30 P M
Akron, Canton & Marietta	†2:45 P M	†11:00 A M
Steubenville, Wheeling, Washington, D. C., and Baltimore	†2:45 P M	†11:00 A M

†Daily except Sunday. *Daily. Pullman's Palace Vestibule Drawing Room cars between Cleveland and Chicago.

Bolt and Nut Works.

THE UPSON NUT CO., Manufacturers of Nuts, Washers, Carriage, Machine, Plow and Elevator Bolts, Coach Screws, etc.

CHICAGO HEIGHTS

The Industrial Centre of Chicago

offers **Free Factory Sites** and other inducements.

If you are seeking a new location it will pay you well to investigate the merits of our proposition.

Chicago Heights Land Association

M. H. KILGALLEN, Gen'l Mgr. CHICAGO

IN THIRTY YEARS

prices on **good** new, and second-hand, metal working machinery have **never** been as **low** as to-day.

The bottom mark has been reached.

Nearly all the good second-hand **machinery** on the market has been **sold out.**

Stocks of new machinery are **running down** very fast.

One month more will clean everybody out.

Then prices on everything will **advance.**

If **you** need anything, and want it at present low prices, better write for our list **to-day.**

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Western	dis 70
Stub's	dis 25
Grobet's	dis 30
Reynolds Bros.' Hand Cut	dis 50
Industry File Works Hand Cut	dis 50

Hammers.

P. S. W	dis 40
Atha new list, Jan. 15, 1887	dis 50
Heavy hammers and sledges under 5 lbs	12c
" " " " over 5 lbs	10c

Jack Screws.

Illinois Bolt Co. list	dis 75

Nuts and Washers.

Size of bolt inches	¼	5-16	⅜	½	⅝	¾	1
Square	8	7	5½	4¾	4	3½	3¼
Hexagon	15¾	11¾	8½	6	5¾	5¾	
Washers	9	8	7	5	4½	4½	4¾

In lots less than 100 lbs, ₱ lb add ¼c., 1 lb boxes add 1c to list.

Nails (wire).

List July 14, 1887	dis 85
Standard Penny Nails, ₱ keg card rate	
Car lots	$1.10
Less than car lots	$1.25

Oilers.

Zinc and Tin	dis 60
Brass and Copper	dis 50
Malleable (Hammer's), No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz	dis 10@10&10

Packing, Steam.

Boston Belting Co.	dis 60
American Packing Hemp	₱ lb 9@10
Russia " "	₱ lb 14
Italian " "	₱ lb 13@19
Plumbago Piston	₱ lb 40
Peerless	₱ lb 60
Morrison's "	₱ lb 45
Square Flax "	₱ lb 50
Sheet Rubber	₱ lb 12&24
Excelsior Rubber	₱ lb 40
Rainbow { Full Rolls	45c ₱ lb
Rainbow { Less than Full Rolls	50c ₱ lb
Eclipse Gasket	₱ lb 75

Picks.

Railroads, 5 to 6 lbs	$12 dis 60
" 6 to 7 lbs	$13 dis 60

Pulleys.

Iron Pulleys, Walker List	dis 50
Medart Pulleys	dis 50
Split Wood Pulleys	dis 50@60

Rivets.

Iron, Thousand, list November 17, 1887	dis 50&10@60
Iron, Ordinary, Cooper's Block and Carriage list November 17, 1887	dis 50&10@60
Copper	dis 50@50&10

Saws.

Disston's Circular	dis 40&10
" Band	dis 25
" Scroll	Net
Hack Saw Stubs	dis 20
" " Eureka	dis 20
" " Star	dis 20
Saw Swages Diston's	dis 30
Atkins' Circular Saws	dis 40&45
" Mill, Mulay and Drag Saws	dis 40&10
" Wood Saws	dis 40&10
" Silver Steel Diamond Cross-cut Saws	70c per ft
" Dexter Cross-cuts	50c "
" Diamond "	30c "
" Tuttle Tooth Cross-cuts	25c "
" One-man Cross-cuts	32c "
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No. 6 "	16c "
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Derfection "	$15 "
Petroit Saw Works, Circular	dis 50
" " " Band	dis 25
" " " Mulay	dis 45

Taps.

Cards, Hand and Nut to 2 in	dis 50
Carpenters' " " "	dis 50
Morse " " "	dis 50
Pratt & Whitney " " new list	dis 10
Machine Screw Taps	dis 55
Pipe Taps to 2½ in	dis 70
Stay Bolt Taps	dis 25
Stove Bolt Taps	dis 55
Pulley Taps	dis 40

Vises.

Solid Box	dis 60
Parker's	dis 20@25
Prentiss	dis 20
Stephen's	dis 25@30
Barrett's	dis 30
Miller's Falls	dis 40
Merrill's	dis 15@20
Howard	dis 35

Wire.

New List, Apr. 9, 1894

Brass	dis 40
Copper	dis 40
Bright and annealed, Nos. 0@18	dis 70&10@75
" " Nos. 19@26	dis 75&75& 5
" " Nos. 27@36	dis 75&10& 5
Coppered Nos. 0 to 18, market list	dis 70@70& 5
Galvanized Nos. 0 to 18 " "	dis65& 5
Tinned market Nos. 0 to 18	dis 67½
Cast steel	dis 50
Tinned Broom Wire	dis 70&5@70&10
Annealed Fence, Nos. 8 and 9	dis 75
Annealed Grape, Nos. 10 to 14	dis 75
Stub's Steel Wire regular	95c ₱ lb dis 30

Wrenches.

Coe's genuine	dis 50
Girard Standard	dis 70&10
Agricultural	dis 75&10
Mechanic's	dis 55&10& 5
Bemis & Call's Combination	dis 35
Donohue's Engineers	dis 20&10
Lamson & Sessions Engineers	dis 60
Billings & Spencer's Drop Forged	dis 25
William's " "	dis 25
Alligator " "	dis 40

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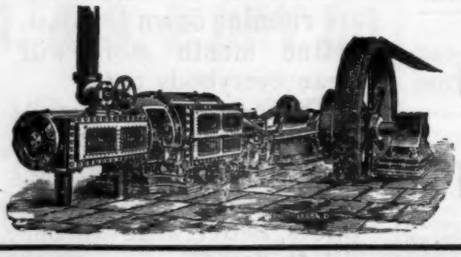

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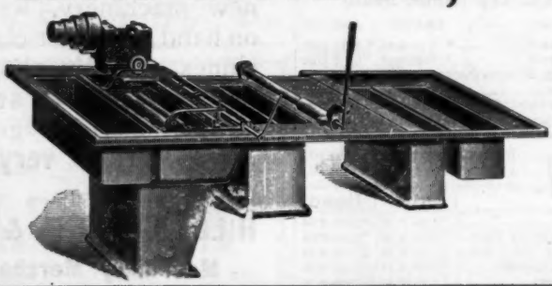

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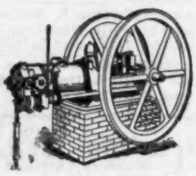

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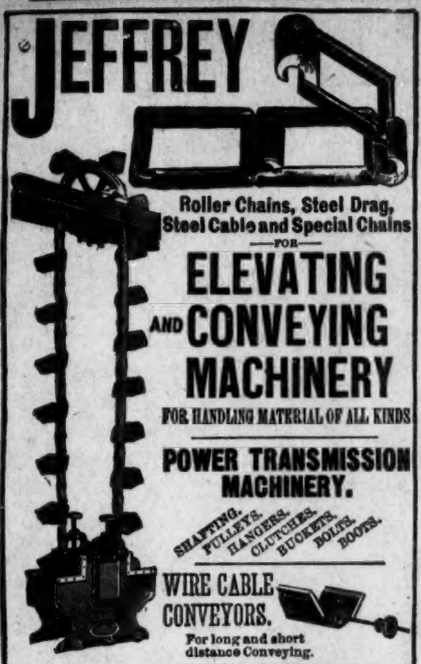

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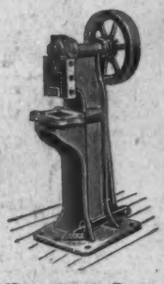

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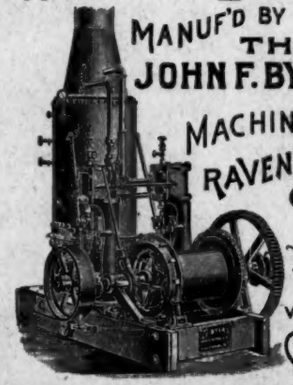

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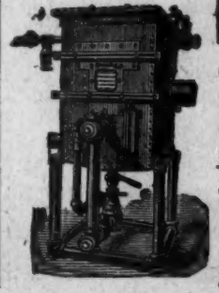

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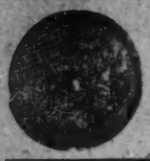

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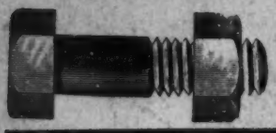

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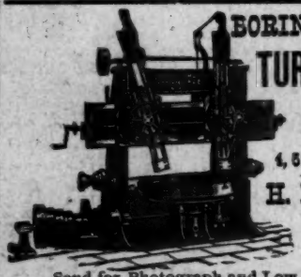

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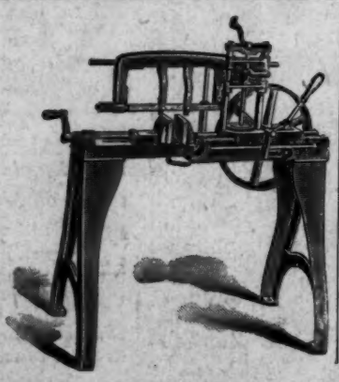

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